Chemical Week

September 7, 1957

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Customs simplification comes closer as Treasury issues first list of exempt chemicals . . . . p. 21

Plant in a resort area is no picnic for production executives. Here's why . . . . . p. 27

Mass-produced markets for intermediates is aim of new Monsanto development project . . . . p. 78

On Colgate campus, AMA course gives top corporate brass chance to "let its hair down." . . . . p. 47

Sensitive skins: target of upcoming cosmetic ad push. It's a $10-million market . . . . . p. 95

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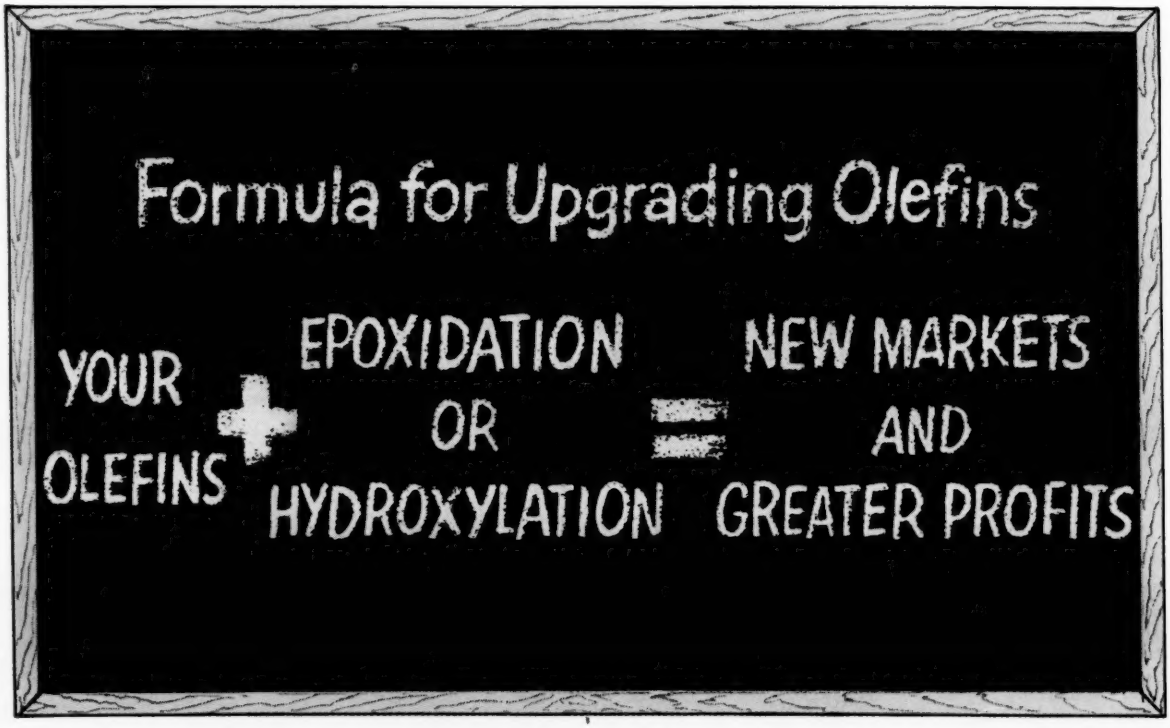

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Chemical Week

TOP OF THE WEEK **September 7, 1957**

- **Stock prices of process industry firms are dropping.** One exception: drug producers. .....**p. 24**
- **"Crash" engineering is getting to be routine** procedure for more and more chemical firms. To use it wisely, here are the rules to follow .....**p. 37**
- **Top chemical executives got salary increases** last year, but the average increase was less than the average for executives in all industry .....**p. 47**
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22 Here's the status of the flu vaccine production situation.

23 Water pollution control activities are again in the news.

24 Drug stocks resist downward pressures that tumble prices of most process industry stocks.

27 PRODUCTION
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37 ENGINEERING
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88 Canada is importing more from the the U.S.—and exporting less.

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100 Detergents packed in metered containers are finally going on the market.

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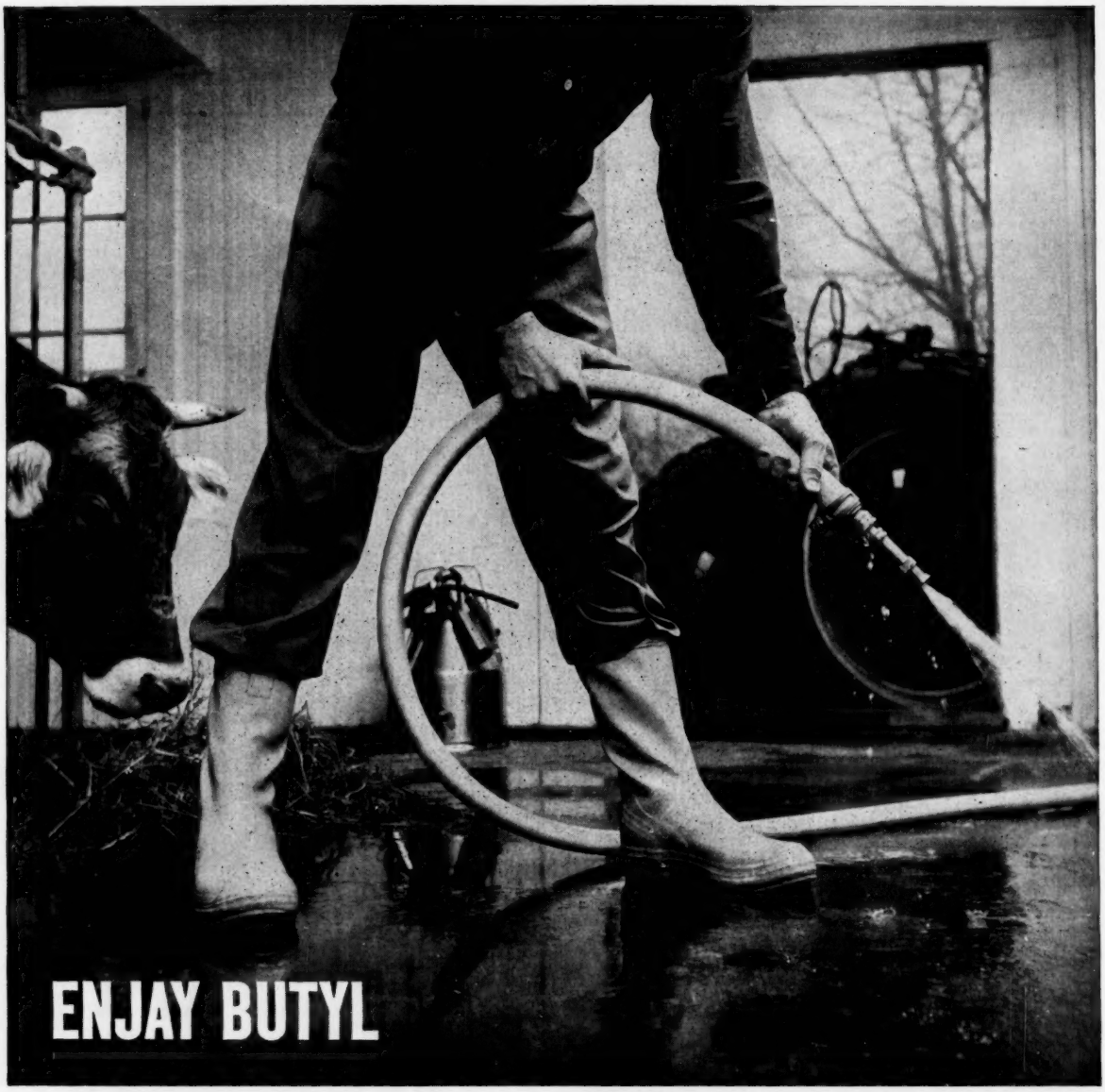
Canada's ammonia production shows a substantial increase.

Watch CW Grow — 36,827 copies of this issue printed



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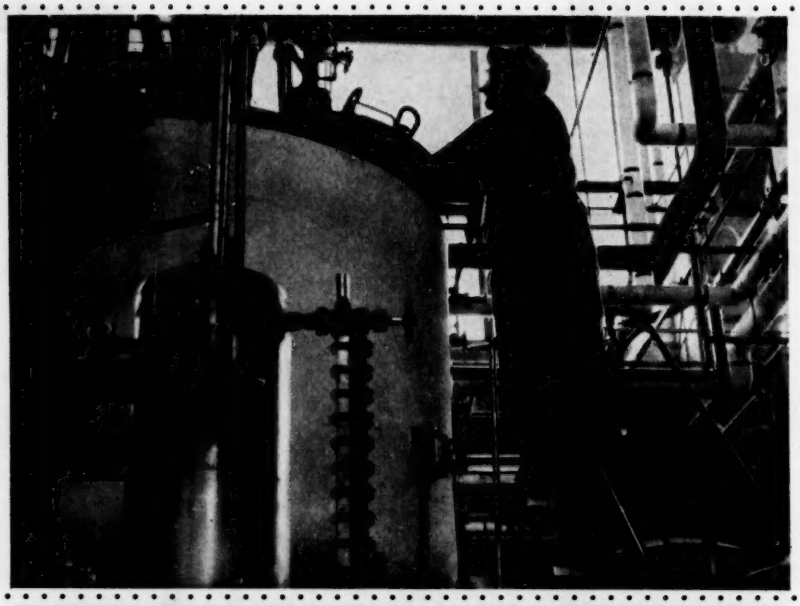

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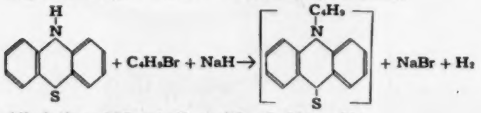
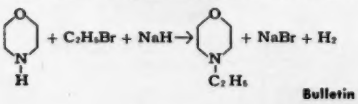
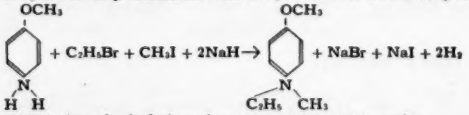


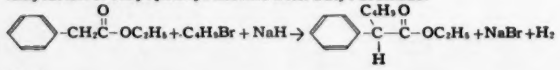
Alkylation of Morpholine with ethyl bromide:



Alkylation of p-anisidine with ethyl bromide and methyl iodide:



Alkylation of ethyl phenyl acetate with butyl bromide:



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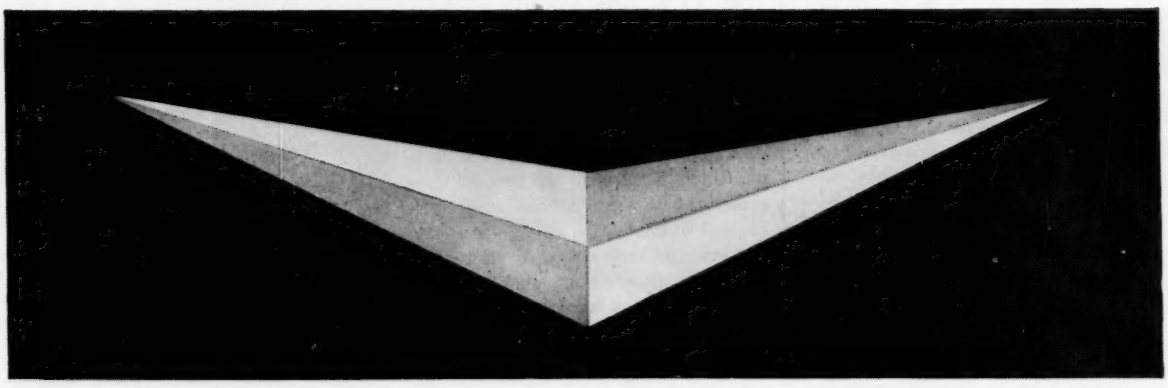

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OPINION

Anent Zefran

TO THE EDITOR: . . . regarding the Australian patent on a fiber by Dow Chemical Co. (*CW, Technology Newsletter, Aug. 31, et priori*), our present plans are not to reveal information about what our fiber, Zefran, is composed of, or any technological information about its method of manufacture . . .

We consider ourselves a responsible member of the business community and chemical industry, at the same time conscious of the need for freely flowing information that can be substantiated.

Your statement about Zefran's dye receptive ingredient is an example of unsubstantiated information, which we consider irresponsible reporting. To be accurate, this information should have been expressed as a rumor.

Having covered the chemical industry as CHEMICAL WEEK has for many years, you certainly know that Dow's research on synthetic fibers has covered many areas. We have made many fibers during this research activity—some of them on laboratory scale, others on pilot-plant scale. . . . Patents are generally applied for relating to all of the research activities in the fiber area. We have filed patent applications on a number of different systems, each of which is capable of producing a material with some possibility of commercial utilization.

These patents cover a very wide variety of production; some of them cover operations we expect to utilize in the production of Zefran. Some are alternate routes to the production of materials similar to Zefran. Still others are not even closely related to our present Zefran product. We do not feel it is our responsibility to indicate in any way [the] . . . category of each patent. To do so would mean the revelation of information that we believe is within our domain to keep confidential . . .

A. J. LAZARUS
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CW *will stand by the facts in its story, based both on textile industry reporting and on patent data—facts that, incidentally, are not disputed by Reader Lazarus.*—ED.

CW welcomes expression of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

Chicago-N.Y. Waterway

TO THE EDITOR: It was very gratifying to see the recognition of the importance of the inland waterway system in the Chicago area (*CW, Aug. 3, p. 30*).

It was not noted that while there is little traffic between New York and Chicago, it is potentially far greater than some of the traffic now moving in the area. Oddly enough, many Chicagoans do not realize that the city is connected by water with New York just as it is with New Orleans.

A. B. MALEY
Alexander Chemical Corp.
Chicago, Ill.

Moral: Give Ideas Away

TO THE EDITOR: In my view, your CHEMICAL WEEK is the most superior . . . publication put out.

The writing seems most understandable, and we know zero about chemicals, and minus zero about the jumble of letters and figures that designate them.

You still win however.

Your "Ideas from Outsiders can be Dangerous" (*CW Report, Aug. 17, p. 107*) enlightens me greatly, as I've sent in ideas and told folks to use them, as they would profit from such with no luck whatever . . .

I know two people that invented and patented the mail bag catcher that used to hang by the door on mail cars. Try as they did they could not get any of the eastern railroads to use it until after the 17 years passed. So my belief is that one should give his ideas away if he can, and generate more; the odds are that re-

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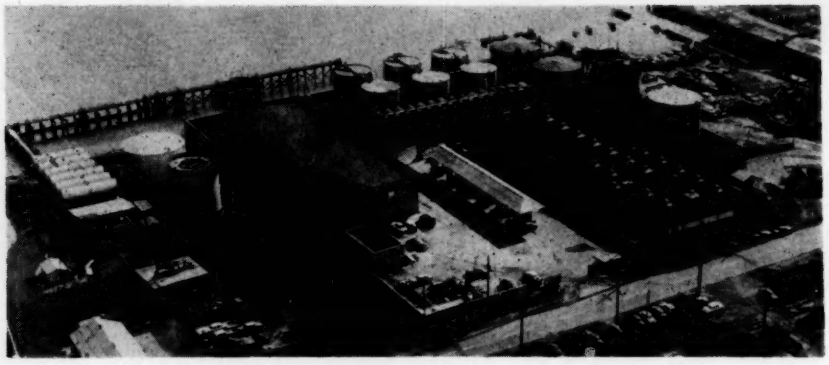

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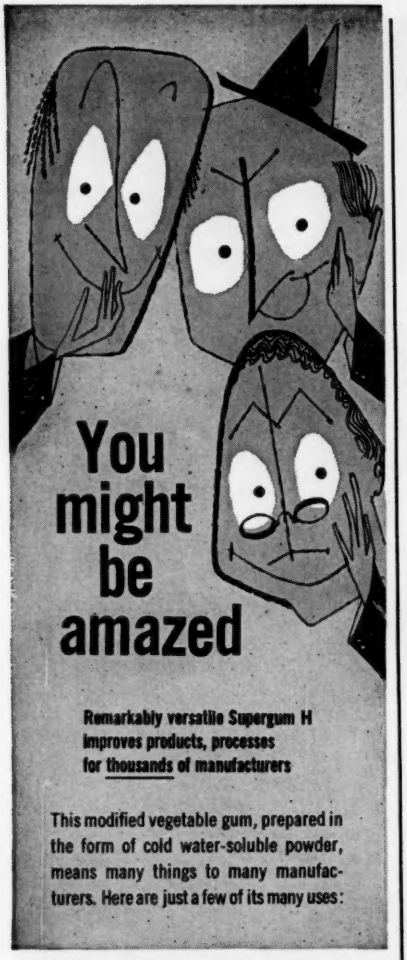
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muneration will come sometime, however slowly.

The trouble with the suggestions is, perhaps, not with the company receiving them or the fellow sending them in. Could it be with legal lights that hook in at both ends and in the middle?

HAMMOND MATHEWS
Silverton, Colorado

Canadian Expansion

TO THE EDITOR: Your tabulation, "Major Canadian Chemical Industry Projects to Be Completed in 1957" (*CW, Aug. 10, p. 34*) ascribes a sulfuric acid plant at Copper Cliff to the International Nickel Company. This plant is being built by Canadian Industries Ltd. and, while it will use waste gases from International Nickel Company as its raw material, the plant is our property. . . .

W. H. CRAIG
Supervisor—Information Services
Public Relations Department
Canadian Industries Ltd.
Montreal, Canada

CW thanks Reader Craig for extending the data presented in our story.—ED.

Cancer 'First'

TO THE EDITOR: You report (*CW Technology Newsletter, Aug. 17*), that the Upjohn Company is the first private firm to receive a contract on commercially unavailable steroids from the National Cancer Institute for their drug screening program.

This is to advice you that your information is in error in that this corporation has already completed one contract under the National Cancer Institute's drug screening program and will complete our second contract within the next three weeks.

LAWRENCE HICKS
President
Organics, Inc.
Chicago, Ill.

There is a basic difference between Upjohn's contract for production of commercially unavailable steroids and the type of contract under which Organics, Inc., has operated. Upjohn's contract is a continuing one, under which it will synthesize a variety of materials to the National Cancer Institute's order; as such the contract is a "first." NCI has signed many contracts for individual steroids, mainly on a low-bid basis.—ED.

MEETINGS

Instrument Society of America, 12th annual instrument automation conference and exhibit, Auditorium, Cleveland, Sept. 9-13.

Society of Photographic Scientists and Engineers, conference, Berkeley-Carteret Hotel, Asbury Park, N.J., Sept. 9-13.

Technical Assn. of the Pulp and Paper Industry, testing conference, Hotel Shoreham, Washington, Sept. 11-13.

Chemical Market Research Assn., annual resort meeting, theme: impact of St. Lawrence Seaway on chemical industry; bus tour of Seaway site, Sept. 15, meeting at Lake Placid Club, Lake Placid, N.Y., Sept. 15-17.

Canadian Agricultural Chemicals Assn., 5th annual meeting, theme: safety and health, Mont Tremblant Lodge, Quebec, Canada, Sept. 15-18.

International Union of Leather Chemists Societies, 5th conference, Rome, Italy, Sept. 15-20.

National Bureau of Standards, free-radicals symposium, Washington, Sept. 18-20.

Drug, Chemical and Allied Trades Section of the New York Board of Trade, 67th annual meeting, Galen Hall, Wernersville, Pa., Sept. 19-21.

National Records Management Council, 4th annual conference, Hotel Roosevelt, New York, Sept. 20.

Technical Association of the Pulp and Paper Industry, engineering conference, Netherland-Hilton Hotel, Cincinnati, Sept. 23-26.

National Plant Food Institute, New England fertilizer conference, Bald Peak Colony Club, Melvin Village, New Hampshire, Sept. 25.

American Oil Chemists' Society, 31st meeting, Netherland-Hilton Hotel, Cincinnati, Sept. 30-Oct. 2.

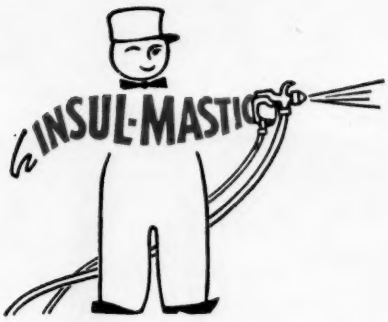
Joint Military-Industry Packaging and Materials Handling Symposium; theme: packaging and materials handling in action; Fort Lee, Va., Oct. 1-3.

Technical Assn. of the Pulp and Paper Industry, plastics-paper conference, Sheraton-Gibson Hotel, Cincinnati, Oct. 7-9.

National Electronics 13th annual conference, Hotel Sherman, Chicago, Oct. 7-9.

Committee on Vacuum Techniques, 4th annual symposium, Hotel Somerset, Boston, Oct. 9-11.

Time-Life International and Stanford Research Institute, international industrial development conference, Fairmont Hotel, San Francisco, Oct. 14-18.



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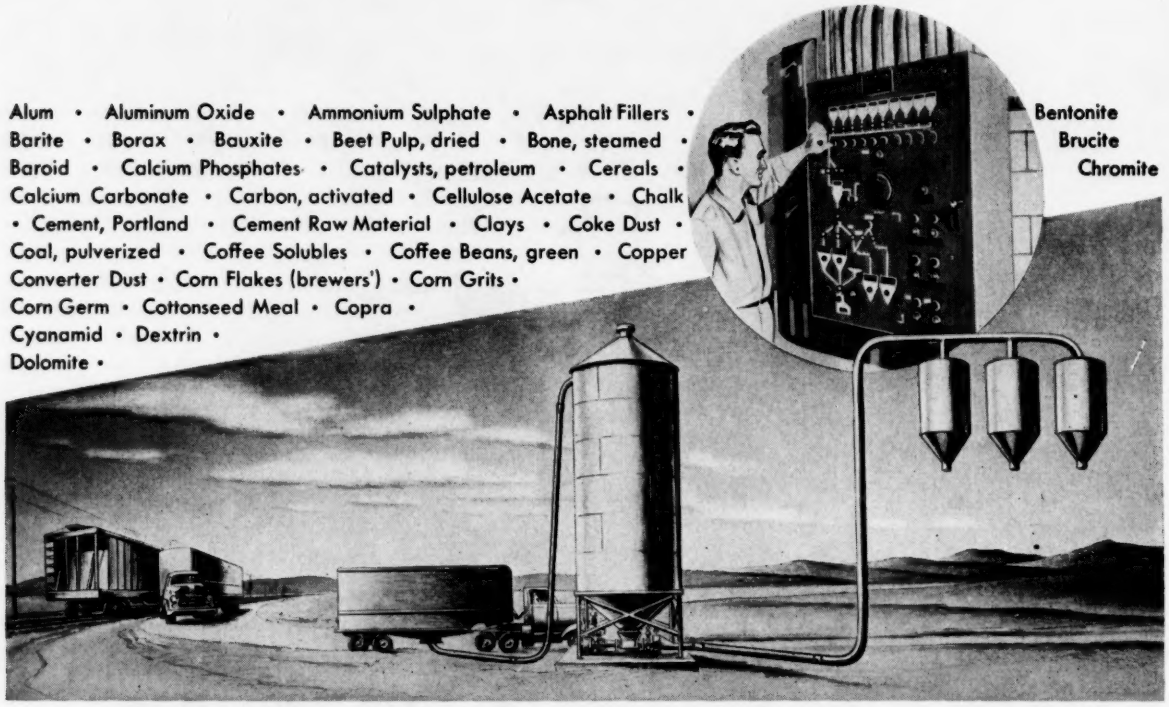

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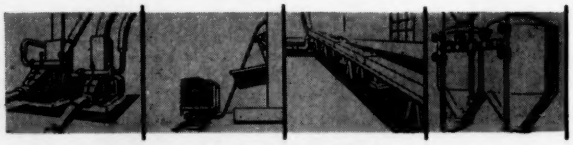

G-139
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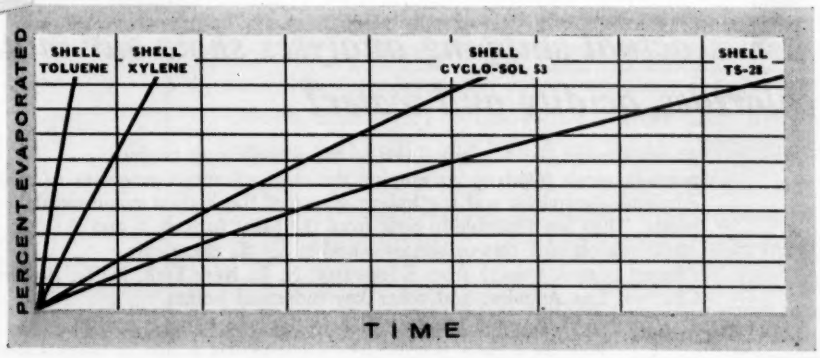

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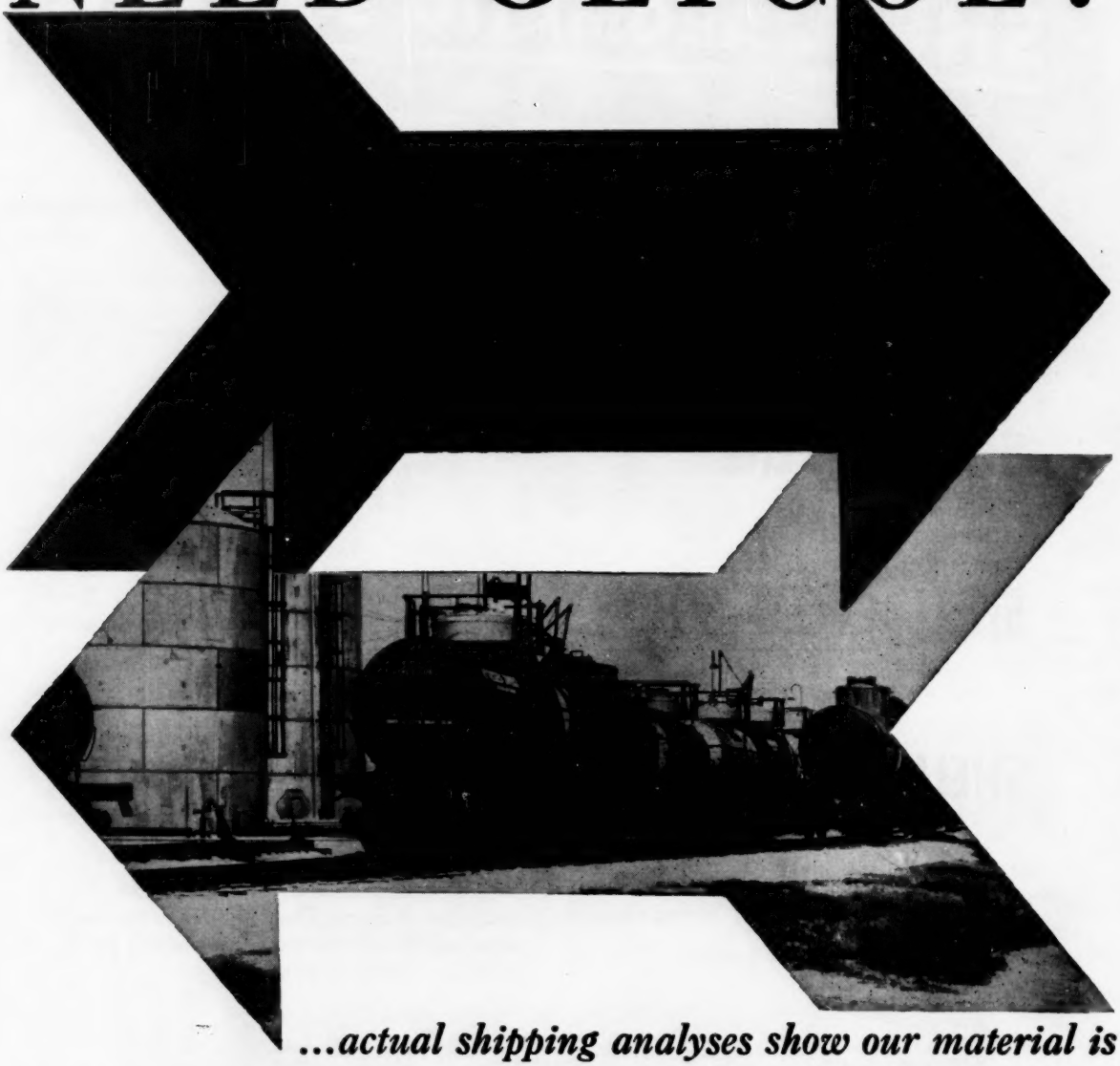

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Business Newsletter

CHEMICAL WEEK
September 7, 1957

Expansion by acquisition is the tack taken this week by a number of firms in the process industries:

American Agricultural chemical will purchase Buhner Fertilizer (Seymour, Ind.). Terms of the transaction have not been revealed.

National Gypsum and American Encaustic Tiling are talking merger, although there's been no definite plan set. Merger would be via a stock swap.

Scott Paper Co. plans to buy a 17% interest in Joa Co., Florida paper specialties and machinery maker. By the exchange of stock maneuver, Scott would have the option to buy all Joa's assets at a later date.

Ideal Cement Co. has its eye on Northwestern Portland Cement, will swap 38,756 of its shares to acquire control of the Seattle company.

Illinois Powder-American Cyanamid merger plans moved ahead last week with Illinois' stockholders approving sale of the company's assets to Cyanamid (*CW, Aug. 17, p. 24*).

•

Is chemical trade between France and Red China in the cards? Representatives of the French chemical industry are in the French economic mission that left for Red China last week. The group is to study how French companies and technicians can help China's five year plan. Both Pechiney and Kuhlman have members on the mission, which could be the opening move in eventual recognition of Red China by France.

•

American Home Products Corp. may split its stock two-for-one; the board of directors have approved the plan, and stockholders will vote on it Oct. 23. Authorized stock would be increased to 10 million shares by the move.

•

A possible new delay in the Niagara Falls power project has indirectly threatened the expansion plans for the area's electro-chemical process industry. The delay threat arose after the Federal Power Commission had authorized New York state to build the $600 million hydroelectric station. Although FPC okayed the project, it proposed to hold further public hearings on certain phases of the engineering of the project. And this "conditional" license is strongly objected to by the state power authority because the hearings could possibly delay the ordering of equipment, as well as possibly add $100 million to the project's costs. Ground was to have been broken for the project next week.

•

Estimates of U.S. shale oil reserves were substantially boosted last week in the latest report of the U.S. Bureau of Mines. New analyses

of cores from the oil shale beds show the beds are much thicker than thought before—estimated reserves in Colorado alone are closer to 1.5 trillion barrels than the 1 trillion barrels estimated only last year. Reserves in Utah and Wyoming add another 35.6 billion barrels.

Only shale with a 25 gals./ton content is included in the estimates (present retorting methods, however, can't extract all of it).

•

First Orange County (Texas) firm to sign a union contract is Acheson Dispersed Pigments Co. Acheson and the Oil, Chemical and Atomic Workers settled on an 18-months agreement which provides a 25¢/hour wage increase for employees. The OCAW also claims to represent a majority of workers at Allied Chemical's Orange County plant, (*CW Business Newsletter, July 20*), although the National Labor Relations Board has yet to conduct an election that could indicate the actual situation.

•

Pesticide makers are mounting a strong public relations campaign to offset the barrage of criticism of their products. Complaints from fish and wildlife preservation groups that chemical spraying was killing fish and birds made almost daily headlines this summer, during the U.S. Dept. of Agriculture's gypsy moth spray program. The National Agricultural Chemicals Assn. will lead the campaign, providing luncheon speakers, and offering data to dispute contentions that the spraying programs endanger wildlife.

•

Westvaco has found salt deposits near Ben's Run, W. Va., as a result of its drilling program (*CW Business Newsletter, June 8*). Delta Drilling Co. located the bed of solid rock salt at the 6000-7000 foot level, and Westvaco is now exploring its economic possibilities.

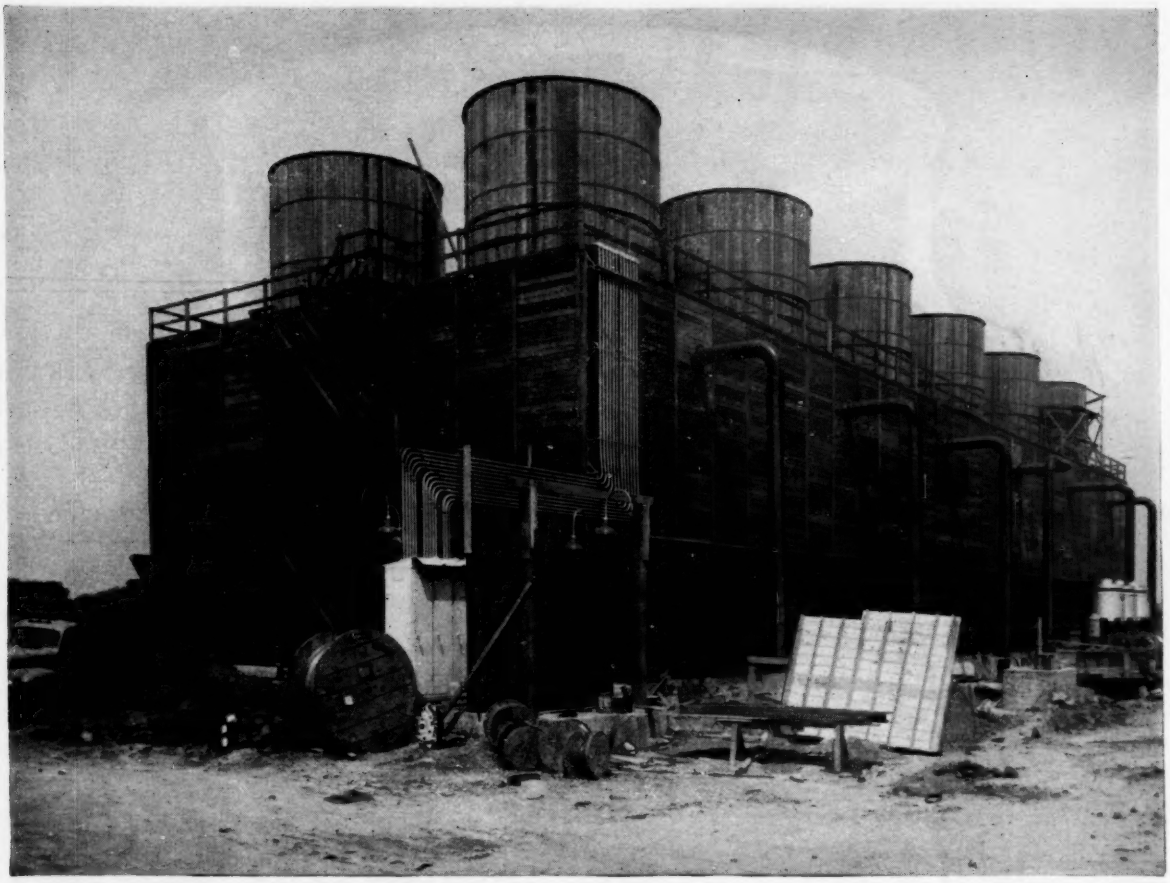
•

Stronger competition for the world synthetic fiber market is ahead. Britain's Imperial Chemical Industries is making a major bid to double export sales of its Terylene polyester fiber next year. ICI, exporting the fiber at a 3 million lbs./year pace now (triple the pace only a year ago), seeks to add Austria, Switzerland, Sweden, Finland, Portugal, Spain and India to its list of major market areas that now centers around Denmark, Norway, Iceland and the commonwealth countries.

ICI is currently operating its Terylene facilities at capacity—20 million lbs./year—but it will add another 10 million lbs./year next year.

•

Latest step in bringing Canadian gas to the U.S. is the formation of Alberta & Southern Gas. Co., Ltd. The new company will buy the Canadian gas to be sent through the pipeline planned by Pacific Gas and Canadian Bechtel, Ltd., Canadian Western Natural Gas Co. and Northwestern Utilities, Ltd. Shell Oil will supply most of the gas.



The time to stop corrosion is before it starts

Long before the first drop of water contacts metal in any large recirculating water system, steps should be taken to prevent corrosion.

Early in the design stage, plan on adding chromate inhibitors to recirculating water—from the moment operation starts. That way, clean metal stays clean. Delay, and the metal gets blanketed by rust and scale, which makes it difficult for any inhibitor to reach and protect the metal.

Chromates work two ways: they make waters non-corrosive while making metal surfaces corrosion-resistant. Chromates are inexpensive to use—they do their work at maintained concentrations of 100 to 400 parts per million. These inhibitors may be introduced either as sodium chromate or bichromate.

For literature on Mutual chromates in recirculating water systems, or in other applications, mail the coupon below.

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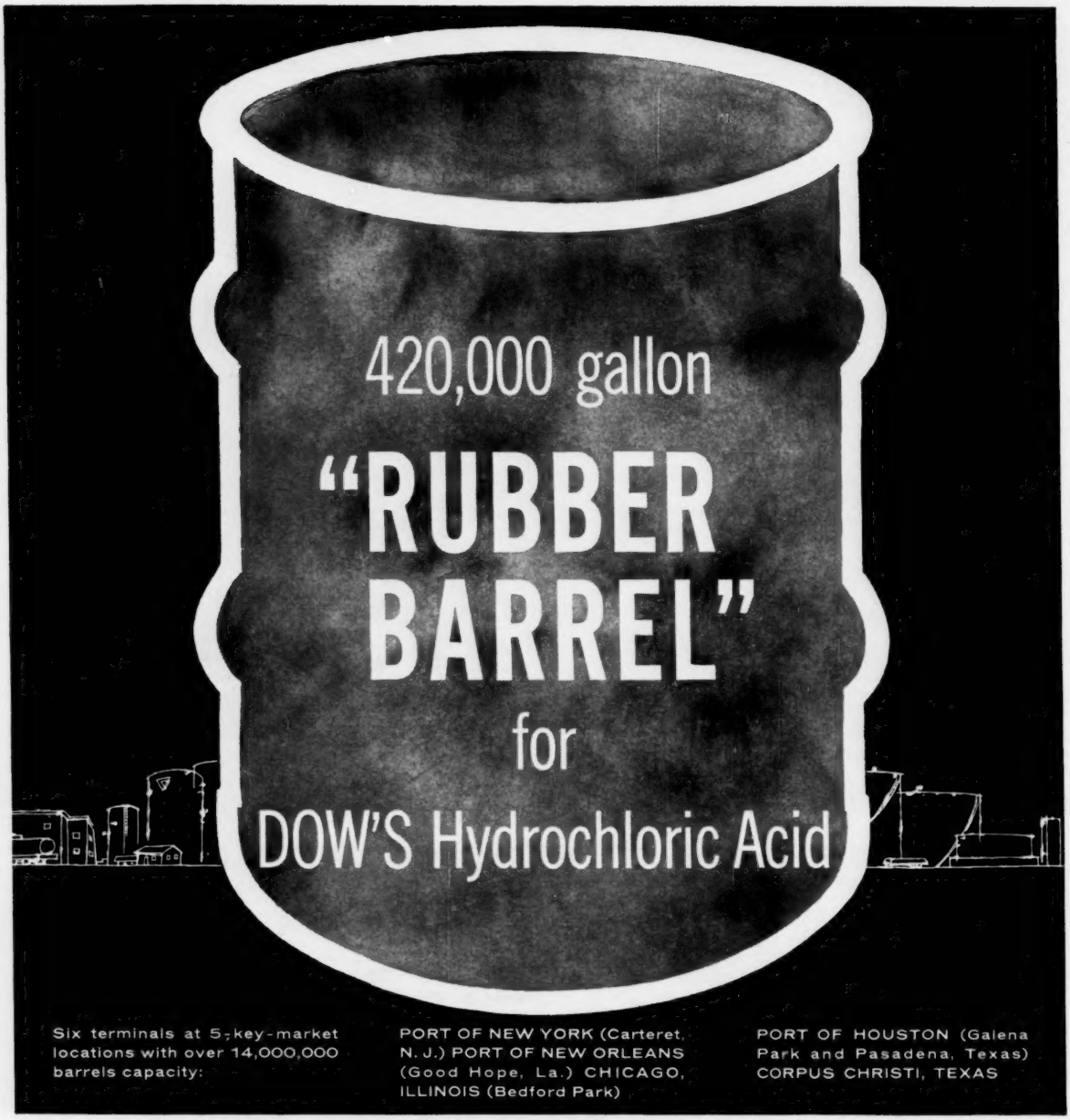
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CW NEW YORK 3:15

HERE'S THE WRAPUP ON CUSTOMS SIMPLIFICATION.

THE TREASURY DEPARTMENT TODAY PUBLISHED A PRELIMINARY LIST OF IMPORTED ITEMS THAT WILL BE EXEMPT FROM THE SIMPLIFIED NEW METHOD (DECREED BY CONGRESS) OF FIGURING IMPORT DUTIES.

268 IMPORTED FINISHED COAL-TAR PRODUCTS WOULD GET DEEP TARIFF CUTS IF ASSESSED UNDER THE NEW METHOD.

NOW IT'S UP TO DOMESTIC PRODUCERS TO SUGGEST OTHER IMPORTED CHEMICALS FOR THEEXEMPT LIST. EXEMPTED CHEMICALS WILL BE ASSESSED UNDER THE OLD METHOD, WHICH RESULTS IN A HIGHER TARIFF.

TREASURY EXPECTS A FLOOD OF SUCH REQUESTS ---DEADLINE FOR FILING IS OCT. 20. EXPECT ANNUAL REVISIONS OF THE EXEMPT LIST UNTIL 1960.

DESK/WASHINGTON 3:19

Coal Tar Chemicals Face New Tariff Threat

For the past year, customs officials have been scanning some 26,000 classifications of products, seeking out the relatively few that will escape the tariff-cutting impact of the 1956 Customs Simplification Act. Last week, the Treasury Department unveiled the first fruit of this effort—preliminary list of exempt items. It includes 268 finished coal-tar chemicals, out of some "thousands" of imported finished coal-tar chemicals included in the survey.

The Law: In enacting the administration measure, Congress aimed to cut through the "red tape" that had enveloped U.S. customs procedures. It sought a uniform method of determining the value of compound-duty merchandise and imported articles taxed with *ad valorem* import duties. The new valuation basis decreed by the lawmakers defined export value as the usual wholesale value established in the country of origin for sale to the U.S. market.

Under the law, this procedure was to take preference over the older formula of calculating duties on the basis of either the wholesale value placed on the article by the foreign producer for sale in his home market, or the value for sale to other foreign markets. The higher value becomes the duty. Learning the domestic value of a foreign-produced item often is a time-consuming problem. The importer is often uncertain of the duty he has to pay, long after he has sold the merchandise.

Importers' Gain: The change to the export valuation procedure is a clear gain for U.S. importers. In the vast majority of cases it won't change the amount of duty on imported goods that compete with U.S. industry. But coal-tar chemicals, some rubber footwear and fish products among other items would come in at reduced duties under the new valuation procedure. Dangers are particularly grave for U.S. producers of fine chemicals—e.g., coal-tar dyes. These are the lifeblood of numerous small businesses, many of which have been facing increasingly stiff competition from Swiss, West German and Italian exporters. These high-priced, low value products are batch-produced, requiring skilled handling through several stages of processing. Result: labor is a big part of their total cost. Foreign firms have the skilled workers but pay them less than do U. S. producers—This gives the foreign firm a clear cost advantage—even in the U. S. market.

Next Round: Now, the next round belongs to domestic producers. They have 60 days—until October 20—to petition the Treasury Dept. for additions to the exempt list. Customs officials expect a heavy volume of such petitions, but hope to complete processing of these requests in time to publish a final list by early 1958. The new export-valuation method will go into effect for all items not appearing on this final list 30 days after issue.

Industry associations haven't yet had a chance to thoroughly study the list. The Manufacturing Chemists Association and the Chemical Industry Association both are maintaining official silence. The Chemical Market Research Association says it hasn't had a chance to examine the regulation. This is echoed by the Synthetic Organic Chemical Manufacturers Assn., which adds it may take an official stand after its next regular meeting in September.

It's fairly sure, though, that the industry will speak up. And some months ago SOCMA, suggested as candidates for the exempt list, the entire tariff classification of finished coal-tar chemical and intermediates—some thousands of items, in all. Last week's preliminary list includes only a fraction of that number.

But producers will have future opportunites to plead their causes. The Treasury must open the exempt list for amendment at annual intervals for another two years. This is a protective feature for domestic industry, too, providing an opportunity to "qualify" an item for the exempt list should its foreign producer quote a lower price for export to the U.S. than to other markets.

In pressing for customs simplification reform more than a year ago, the Administration urged Congress to abandon the American selling price and adopt a single, completely uniform preferred method.

As a result, coal-tar chemical producers were faced with two threats: loss of the special protection (American selling price) granted or "competitive" imports; and imposition of a new valuation procedure—export value—that could cause substantial duty reductions on both competitive and non-competitive imported chemicals. But coal-tar chemical producers were able to force a compromise that resulted in the latest valuation method.

Ship passengers get early doses of Asian vaccine as . . .

Flu Fighters Speed Output

The six manufacturers turning out Asian flu vaccine will meet—and surpass—Surgeon General Leroy Burney's 60-million-dose goal three months ahead of time, according to a CW survey completed this week.

Earlier, Burney set February as the deadline for producing 60 million cubic centimeters of the vaccine (one cc. is a standard dose). But *CW* inquiries reveal that five of the six firms will each be making at least 1 million cc.'s/week by the end of September. And one producer, Merck & Co., plans to up vaccine output to 3 million cc.'s weekly by mid-October. At this rate there's expected to be a minimum of 68 million doses available by the end of November—already 13% more than was asked for, and all of it ready for shipment 3 months in advance.

Contributing to the ahead-of-schedule performance is a new combination of steps in the production process which doubles the yield of vaccine from each fertilized egg used to grow it. Previously, two cc.'s was about the best yield that could be expected, but now a 4 cc. yield is the standard.

Monovalence: The fact that the vaccine is the monovalent type—one that combats only the Asiatic flu strain—helps speed production a great deal. If it were polyvalent (a combination to cope with several flu viruses) it would take about twice as long to prepare, makers say. Also, if the Asiatic strain were put in combination with others, it would have to be in a more concentrated form to be effective.

All six firms launched all-out crash programs in an attempt to produce enough vaccine to prevent an epidemic. Most are on round-the-clock schedules, using assembly-line techniques.

Merck, for example, has hired 375 additional technical personnel on a temporary basis to work on the project. Merck spokesmen say it will meet its 3 million cc./week goal, even if still more personnel must be added.

New Process: Parke-Davis (Detroit) has tripled its facilities for making the vaccine. And it's now researching a new process—details of which are still under wraps—that a P-D spokesman says "might well quintuple its output." An announcement on the successful completition of its tests is expected later this month.

The other vaccine makers, Eli Lilly and Pitman-Moore (both Indianapolis), Lederle (Pearl River, N.Y.) and Natural Drug (Philadelphia) have also greatly stepped up their production schedules.

As plans now stand, after demands of the armed forces are met, all producers will distribute vaccine, through regular distribution channels, to the states according to proportion of population.

While complete tests can't be run on the vaccine, it's expected to prove 75% to 80% effective and to give protection for at least four months,—though there are some estimates that effectiveness may last as long as a year.

Steps Against Pollution

Industry this fall will face a stringent group of new pollution measures drafted by state and municipal agencies. Legislatures in many states are passing long-term anti-pollution bills, many of direct concern to processors. Here's the rundown:

CALIFORNIA—Los Angeles is the focal-point of a new air-pollution abatement law paving the way for standards for automobile exhaust smog-control devices. Other legislation may result from the work of a newly instituted water pollution fact-finding committee.

Also scheduled for scrutiny is the effect of pollution on public water use, fish and game, public health and the economy of the areas involved. Included will be studies of the need for corrective action.

DELAWARE—A new just-passed law creates an eight-number Air Pollution Commission—three members from industry—under the State Board of Health. The law authorizes the board to develop a pollution-control and prevention program, issue pollution correction orders, enter property for investigations, hold hearings and enforce compliance with pollution laws. When necessary, the commission can move for summary abatement of violations, fine violators up to $500.

NEW YORK—A new Air Pollution Control Board working within the Dept. of Health will spend the next two years studying air pollution, cooperating with local "clean air" campaigns and drawing up regulations for pollution control.

After July 1, 1959, the nine-member board, which includes an industry representative, will be empowered to obtain injunctions for immediate action, back its orders with fines up to $500, plus $100 for each day violations continue. Although authority will be statewide, standards will vary with local conditions (*CW Business Newsletter, May 4*).

NORTH CAROLINA—A recently passed bill requires municipalities and industrial plants on the Neuse River to meet anti-pollution standards by Jan. 1, 1962. A similar bill for the Tuckaseigee River died in committee after the Governor protested that local anti-pollution legislation would disrupt the long-range program of the State Stream Sanitation Committee.

By 1962, the committee will have studied and classified North Carolina's 16 river basins, laying the groundwork for pollution-abatement plans drawn in cooperation with municipalities and industrial users. Since 1951, the committee has covered four basins, expects to complete studies of three more this year.

FLORIDA—Complaints that phosphate plant fumes are killing citrus trees and causing beef cattle to lose weight has spurred passage of a bill establishing an Air Pollution Commission within the State Board of Health. Air pollution control districts may be created, some covering entire counties.

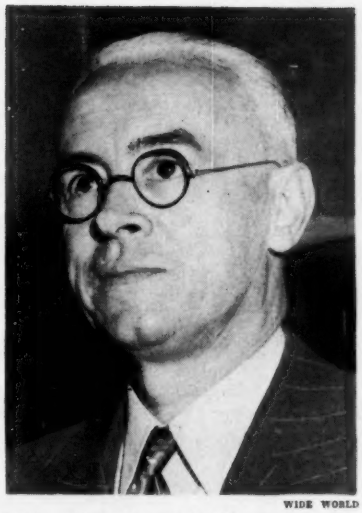
The commission has broad powers to crack down on industries causing pollution that endangers health; it will be able to enforce its orders with court injunctions. Two commission members will represent industry.

A number of other states have anti-pollution programs in the works:

- Ohio has passed a bill providing for an air-pollution-control bureau within the Dept. of Health.
- In Washington a new state law provides for either separate or joint action by cities and counties to control air pollution.
- Nevada has passed a measure authorizing cities and counties, either jointly or separately, to clamp down on "excessive emission of dense smoke and air pollution."

Water Pollution: Water pollution is the target of new bills in several states. A new Maine law provides for the classification of 12,000 miles of water by degrees of pollution permitted. In Missouri new legislation provides for setting up a water-pollution control board to plan a long-range control program, establish water-purity regulations, and issue permits for sewage- and waste-disposal plants. Under a new Kansas law, oil companies must obtain a State Board of Health permit to pump salt water into fresh water pools.

Hard Knock: In Maryland the anti-pollution drive had a setback. The legislature defeated a proposal for an $8-million bond issue to aid towns in preventing pollution of Chesapeake Bay and its tributaries.



WIDE WORLD

BPA chief Pearl: Without rain, it could last six months.

Western Power Cutoff

Northwest electro-process firms last week were facing seasonal electric power cutoffs a month earlier than usual.

A letter to 13 industries in the area from Bonneville Power administrator William A. Pearl explained that "a combination of early spring run-off and light summer rains has dropped flows to below critical levels."

Most of the companies in the area said the curtailment would have no immediate effect on their operations. Spokesmen said they would switch to other power sources, chiefly "provisional" power from Hungry Horse Dam.

According to BPA, which administers the Bonneville program, if rains do not materialize, interruptible power loads could be curtailed beyond Jan. 1.

Industries notified of the cut-off of interruptible power include Aluminum Co. of America, Kaiser Aluminum, Reynolds Metals, Electrometallurgical Co., Crown-Zellerbach, Rayonier, Keokuk Electro-Metals Co., Pacific Northwest Alloys, Victor Chemical Works, Carborundum Co. and Anaconda Aluminum Co.

On the basis of current minimum flows in the Columbia river system, 150,000 to 200,000 kw. of firm load would have to come from elsewhere than the Bonneville system through the first half of September to hold area reservoirs at levels necessary for power generation.

Sliding prices in the stock market cause brokers to be more selective.

Taking Dim View of Chemical Outlook

How well can chemicals fare if there is a business dip ahead? One indication of this comes from Wall Street, where brokers, who must keep an eye on individual firms, as well as on business as a whole, this week were being increasingly selective in the stocks they buy and recommend.

They found little to attract them in the performance of chemical stocks.

Process-industry stock group—with the notable exception of drugs—followed the downhill lead of most of the rest of the market, last week.

The increased choosiness now being shown "on the street" follows naturally from depressed stock prices: brokers are putting their short term funds into stocks with the best prospects for weathering the downslide. But, in addition, it reflects their conviction that firms in a number of chemical industry groups are reporting, and may continue to report, lower sales and profits.

Aluminum: Take the index of stock prices of primary aluminum producers, for example. Since August of last year, stock prices of the four companies in Standard & Poor's index have been sliding downward; in the last three weeks they have hit new 1957 lows. Although they took a slight bounce upward after Russia's ICBM missile announcement last week, their overall decline has been largely because of overcapacity which is expected to lower earnings for the rest of the year.

In contrast, the index for drug stocks, though a shade lower than August 1956 prices, until February of this year, has since then spurted sharply up. In some measure this has been because drug stocks are so-called "defensive" stocks—sound investments in slack periods because of their traditional independence of the general economies. Even so, brokers point to the relatively good performances of the drug industry in recent quarters as a promise of continued good showing. The drug stocks, however, have shown a slight dip in the past three weeks, reflecting concern over upcoming investigations of drug prices and the consequent bad publicity and perhaps corrective action that may ensue.

Other Groups: Capacity considerations are evident in the paper industry forecasts, too. Stock analysts are looking to decreased earnings among the eight firms in S & P's indexes due to the high cost of operating plants at less than capacity. On the other hand, the fertilizer industry, which has an acknowledged heavy overcapacity, shows an index that has apparently reached its low, and is creeping upward from the prices at the start of '57.

Probably the most discouraging performance of all is the index of stock prices for the five lead and zinc producers. Since the first of the year the stock prices have headed sharply downward, are now about 25% lower than at the beginning of January. Brokers obviously entertain little hope for immediate improvement of the deteriorating lead and zinc market.

More static than any of the others is the index for industrial chemical firms. Since the year's beginning the index reflects only mild interest in the stocks, and their prices have varied within narrow limits. Brokers outlook: a continuation of the industry's squeezed profit picture with little expectation of much improvement.

FOREIGN

Pulp/Alaska: Construction of a $55 million, 340-tons/day pulp mill at Sitka is scheduled to begin early in September for Japanese-owned Alaska Lumber & Pulp Co. The magnesium-process mill will take timber from the American Tongass National Forest. Alaska's only other mill, at Ketchikan, already uses the magnesium process to avoid polluting Alaska's fish-rich waters.

•

Nitric Acid/South Africa: The African Explosives and Chemical Industries, Ltd. (an Imperial Chemical Industries, Ltd. subsidiary) has ordered construction of a 150-tons/day nitric-acid plant to supply its existing facilities near Johannesburg by Spring of 1958.

The builder, Chemical and Industrial International, Ltd. (Nassau, Bahamas) can license all processes of The Chemical and Industrial Corp. (Cincinnati), which will design and engineer the high-pressure plant.

•

Ferrites/France: Soft ferrites for the electronics industry will be produced by just-formed Compagnie des Ferrites Electroniques (COFELEC), the creation of a group of French electronics and electrochemical companies. Capitalization: 60 million francs. Three firms are main stockholders: Compagnie Generale de TSF; Thomson-Houston; and Ugine.

•

Merger/England: S. B. Penick & Co.'s London associate, C. F. Gerhardt Ltd., has bought the assets and good will of Huffer & Smith, Ltd., fine-chemicals maker. Gerhardt specializes in botanical drugs and associated products.

COMPANIES

Union Chemical and Material Corp. and Vulcan Materials Co. are discussing merger. Directors of both firms are said to have approved the merger terms "in principle". The agreement calls for an exchange of stock worth about $65 million. One share of Vulcan common and one share of $13-par Vulcan 6¼% preferred would be exchanged for each share of Union common; one share of newly issued $5-par Vulcan 5¼% preferred would be exchanged for each share of Union preferred.

•

Cuban Nickel Co., a subsidiary of Freeport Sulphur Co., will borrow more than $100 million from banks and big nickel consumers to pay for its new nickel-producing plant in Cuba and large refinery at Braithwaite, La.

The Louisiana unit will turn out 50 million lbs/year of nickel and 4.4 million lbs/year of cobalt. It's scheduled to start producing by mid-1959, will cost about $119 million.

Jefferson Lake Sulphur Co. will offer stockholders 143,000 newly issued shares. To be registered with the Securities and Exchange Commission this week, the stock will be offered on the basis of one new share for each five now held. At current prices the issue will be worth about $6 million.

•

Texas Eastern Transmission Corp. has registered $30 million in first-mortgage pipeline bonds with the Securities and Exchange Commission. The company will offer the bonds to the public through Dillon, Read & Co., Inc. Proceeds will be applied to the firm's gas-expansion and reconversion program.

•

American Potash & Chemical Corp. has optioned another 200 acres of land for a proposed $5-million plant near Aberdeen, Miss. Construction is scheduled to get under way early in 1958.

•

Flintkote Co. stockholders, at a special meeting held in Boston, Mass., approved plans to acquire Kosmos Portland Cement Co. (Louisville). Terms call for Flintkote to issue 189,000 shares of its $5-par common stock and 73,000 shares of voting 4½% convertible second preferred stock in exchange for all the outstanding Kosmos shares.

•

Steelman Gas Ltd., Canadian Gas utility, has been granted a permit to process casing-head gas in the Steelman area. Steelman will build a new $20-million plant northeast of Estevan, Sask., to produce propane, butane, gasoline, sulfur and dry residue gas. The residue gas will then be sold to Saskatchwan Power Corp. for use in its natural gas distribution system. More than 17 million cu. ft./day casing-head gas is now being flared in the area.

•

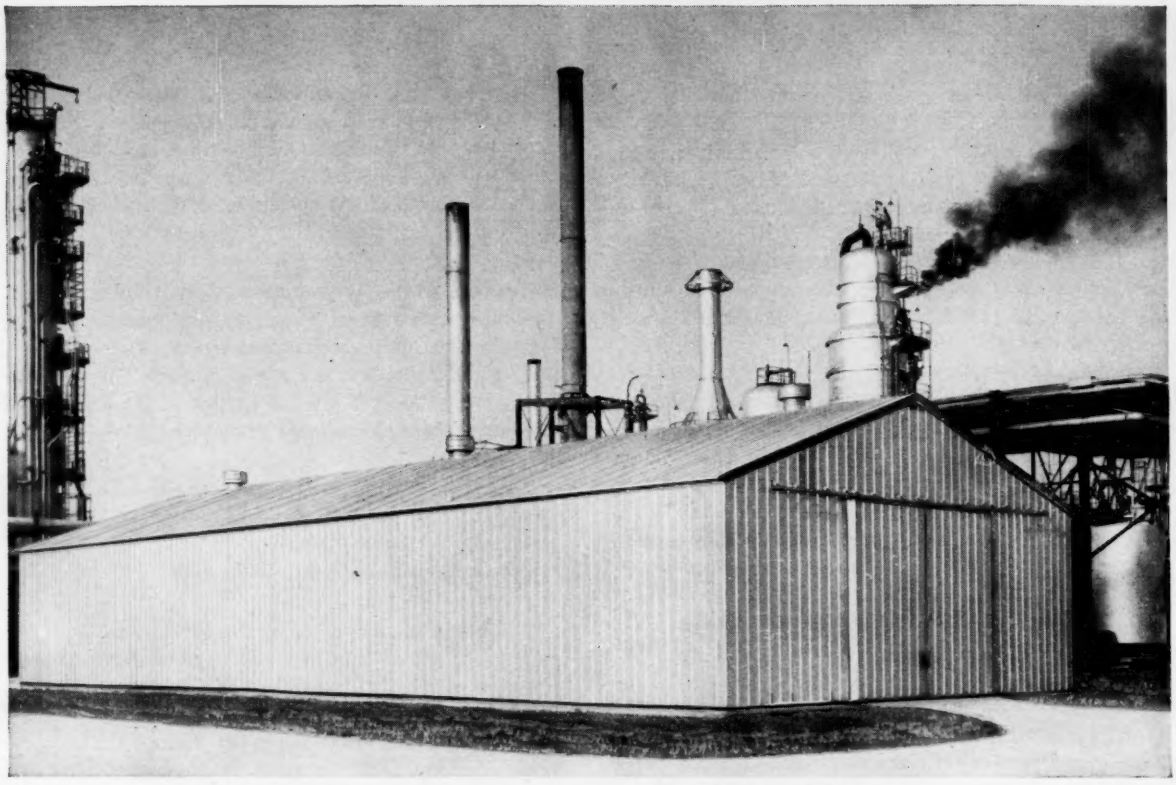
Merck & Co.'s chemical division has established an Electronic Chemicals Division for production and sale of electronic-grade silicon. Chief market for the high-purity silicon will be transistors, diodes and rectifiers.

EXPANSION

Zinc: Mineral Exploration Corp., Canadian metallurgical firm, is negotiating to build eastern Canada's first zinc smelter at Port Maitland, Ont. Cost is estimated at $21 million, with production to be pegged at 150 tons/day of metallic zinc. Sulfuric acid, produced as a by-product, may also be sold.

•

Pulp & Paper: A. W. Wicks Co. Ltd., Feldman Lumber Co. Ltd. and Rudolph McChesney Lumber Co. Ltd. are backing a plan to build a $5-million paper mill in Timmins, Ont. to be known as Porcupine Forest Products Co., Ltd. Capacity will be 150 tons/day. Operations are scheduled to get underway by fall, '59.



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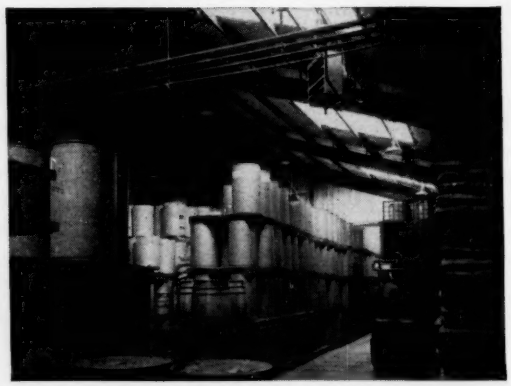

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Chemical process plants, like proposed Rhode Island refinery, cast shadows over resort areas.

Resort Areas Are No Management Picnics

This week, residents of Newport, R.I., paused to ponder with growing concern the chances of their resort area attracting vacationers* if the Commerce Oil Co. refinery is built, as proposed, on Conanicut Island. The latter faces them across the east passage to Narragansett Bay.

Most chemical plant managers can sympathize with the Newport citizens (Niagara Falls is an example of what has often happened in the past when industry concentrates in a resort area), yet, with thoughts of their own summer vacations still fresh, they are apt to view the situation with some bias—more so, because they realize that more and more plants are moving into resort areas and finding the atmosphere friendly as well as refreshing.

*Particularly such eminent ones as President Eisenhower.

How a plant does it is best summed up by Phil Kronowitt, vice president at Toms River-Cincinnati Chemical Corp.'s plant near New Jersey's famed Barnegat Bay playland:

"Any responsible industry that has the engineering know-how and puts it to use for a clean, modern plant that does not throw its problems out into the surrounding area, can locate in a resort-area spot. And, as long as it remains responsible in operating the plant over the years, it'll run into little opposition."

The TR-C plant is an example of what can be done. There is no outward trace that dyestuffs are being made for Swiss owners Ciba, Geigy and Sandoz. Initial costs were higher, and so-called "non-productive" operating costs (i.e. careful control and treatment of all wastes) remain higher than would be considered normal for most dyestuff plants.

But Kronowitt insists that they really aren't "non-productive" costs. By controlling air pollution, there appears to be less equipment corrosion. And reduction in the amount of required painting is noticeable, he says. As for liquid waste: "We know we have to treat our effluent, so the less we make, the less we have to treat. We can show this has led to definite economies in water usage."

Another bonus is in housekeeping. "The plant was engineered for cleanliness. We know we have to operate in a manner that keeps the surrounding area clean. And the idea has caught on so well that, without any preaching, the workers practice good

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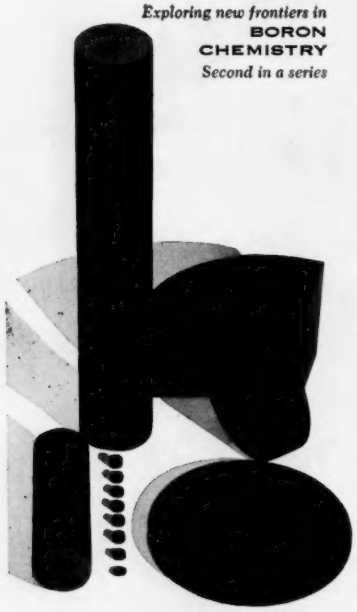

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PRODUCTION

housekeeping in the plant without giving any special thought to it," says Kronowitt.

Long-range Control: American Cyanamid is following a similar tack in Florida, has just completed a pollution-control system, five years in development, that will help protect the fishing waters in the Escambia Bay area from the wastes of its new $25-million acrylic fiber plant near Pensacola. Key point of the program: Most of the raw materials that do not wind up in the product will be recovered for re-use.

Some chemical plants find it easier than Cyanamid and TR-C, because they have no waste problems. Metal Hydrides, located at Beverly, Mass., a short sailing distance across the bay from the yachting center of Marblehead, is in this position. Lewis W. Davis, MH prexy, says that if the firm continues to grow, problems could develop. But chances are the problems won't get that opportunity—MH's first step in any expansion, process development is to call in local and state authorities for "look-see" even before details have been mapped out.

Northwest Magnesite at Cape May Point, N. J. has no waste water problem. But the firm had to put in the best in wet and dry dust-collection equipment to prevent air pollution, has just finished a complete modernization. "When you operate in a resort area, you can never relax and just hope everything goes all right. You have to use the best equipment, keep improving it," says plant manager Richard Umfrid.

Public Relations: Most plant managers in resort areas agree with Umfrid about operating the plant, and they agree that public relation plays a big part, too. TR-C's Kronowitt put it this way: "You don't have the same privacy you would have in a highly industrial area. Everybody in town knows exactly what you are doing and what you are responsible for."

Of course, resort-area plants have this in common with one-industry industrial towns. But there is one important difference: In a resort area most of the people are not dependent on the factory for a livelihood.

Frank Shaw of J.J. Rogers & Co. paper mill at Ausable Forks, N.Y., says his plant fits into both categories—it is in a resort area, but the town was company built and is company owned. But, he added: "Even though the plant is quite old (it was established in 1806 and the original sulphite mill is still operating), we manage to do pretty well. We have marvelous trout fishing right beside the mill. And we are blessed with some fine Adirondack mountain air currents that disperse the small amount of odor that we do put out."

Another plant manager has found that his recreational activites have helped public relations for his plant. As an avid sports-fisherman and yachtsman in the waters near his Florida plant,—people realize that—he would be the first one to crack down on anybody in his plant who infringed the pollution rules. "And if fishermen have any complaints about our harming marine life, they know they can come directly to me for an understanding hearing," he adds.

Reasons for Location: If plant managers find certain aspects of the resort area job a little more difficult, and some firms find the extra controls costly, why do they locate in resort areas?

For paper mills like J. J. Rogers, the answer is easy: That's where the trees are. Too, the mill located there long before the area became a resort area.

For Cyanamid, Florida offered the fine fresh water source it needed as well as a body of water large enough to handle plant effluent. And the new acrylic fiber plant will be in the fast-growing southern textile area.

For Northwest Magnesite, Cape May Point meant the opportunity to meet a government request for product purity, and to solve raw material and transportation problems at the same time. Seawater, needed for its magnesium, is in the plant's back yard. Dolomitic limestone is easily shipped in from the nearby Philadelphia area. And the plant's entirely captive production of dead-burned magnesite (burned at high temperature, it's nonreactive) is only a short trip away from finished-product processing at parent Harbison-Walker Refractories' Baltimore plant.

Metal Hydrides wanted to locate within 50 miles of Boston for the research opportunities offered at MIT. Toms River-Cincinnati's major requirement was to be within 150 miles of the eastern seaboard. Both found

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resort areas rolled out the most attractive welcome mats. A main reason: the stable employment that industry offers.

But don't expect low taxes, warns TR-C's Kronowitt. "Our taxes aren't high, but they aren't low either."

Yet, the combination of offering job stability and operating a clean plant paid unexpected tax dividends for TR-C two years ago. When tax assessors recommended an increase in rate, townspeople rallied to the defense of the firm, helped keep the old rate in force. Another example of acceptance: Hooker's Montague, Mich. plant, where the local garden club has entered the grounds in a state contest this year.

Applicants Aplenty: The firms find plenty of local workers to man their plants. For example, TR-C estimates it has had over 5,000 job applicants over the past five or six years, has not had to advertise for non-technical help. A good many of the applications have come from summer vacationers as well as people who live in the area.

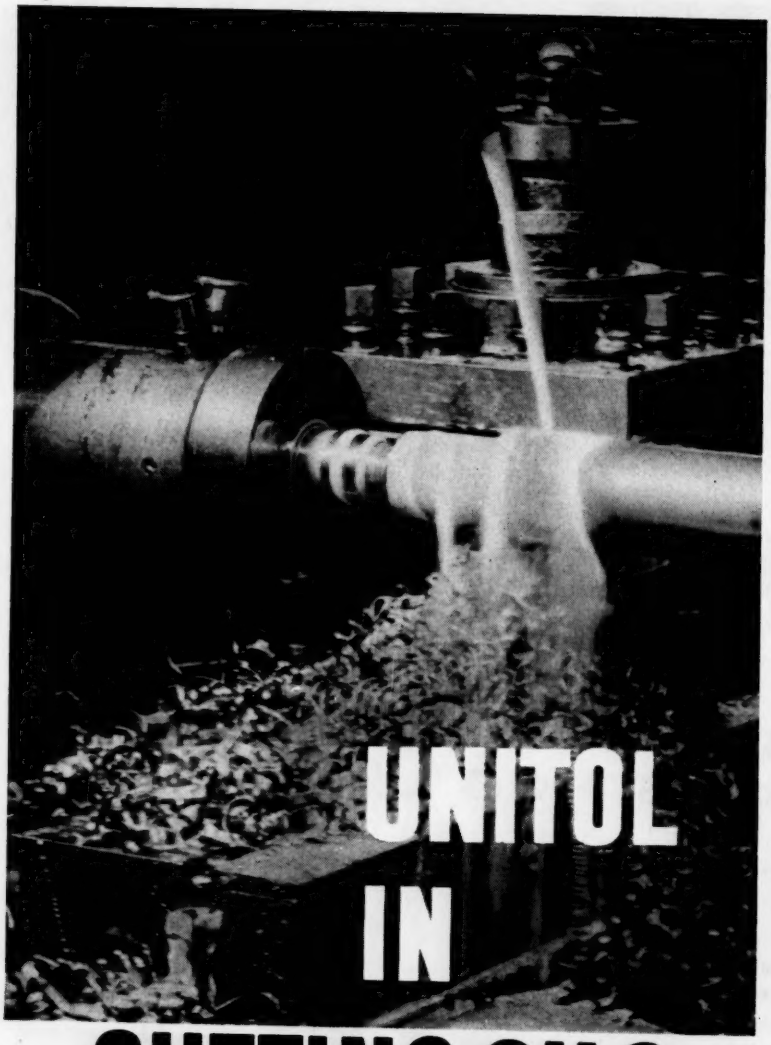
The technical help usually has to be imported. But several firms attest to the fact that being in a resort area aids them in attracting the engineers and chemists they need.

But, the climate can work against some plants. For example, Stauffer in the Henderson, Nev. desert area sometimes has difficulty in attracting men of supervisory calibre. Consequently, the gaming tables of nearby Las Vegas haven't caused them any concern—for in addition to gaming, top night-club entertainment is reasonably priced. One firm in the area though, said it lost a few employees who couldn't resist the gaming tables —they went broke.

But for the most part, labor turnover at resort area plants is low. Usually, there is no real competition for the services of their workers. And, since some of the firms report they pay above-average wages for their industry, there is little to woo workers away from the area once their skills have developed.

As for vacations: "Can't remember when I've needed one," says one Florida plant manager. "Around here, all I need is a day now and then to fish or play golf and I'm happy."

TR-C's Kronowitt says he always takes his vacation trip in the winter. "It's too nice here in the summer."



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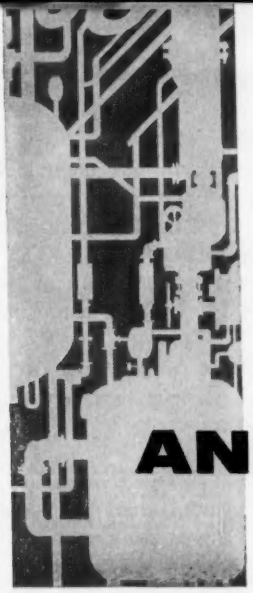

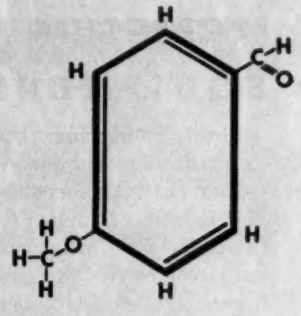

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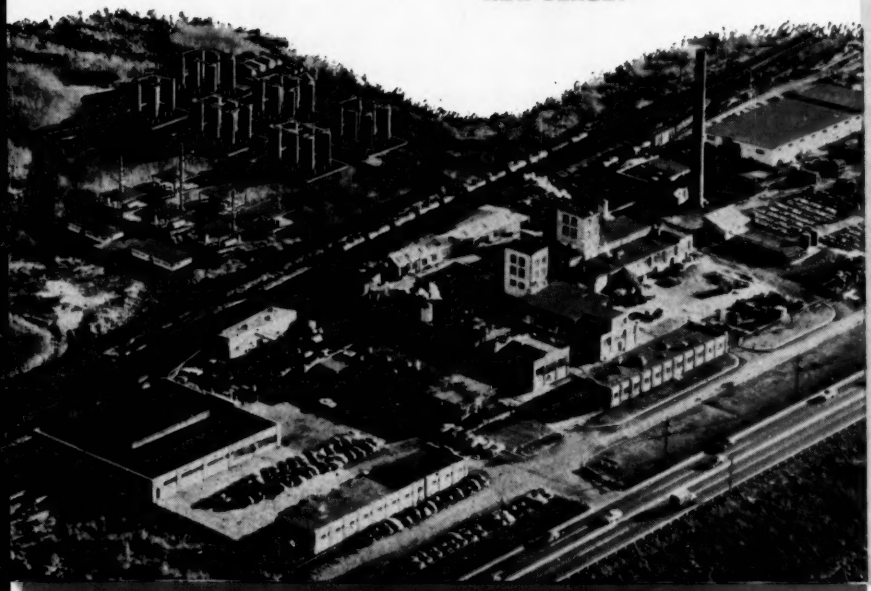

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EQUIPMENT

Metals Fabrication: Three new developments—two for production, and one in early stages of development —have just been announced.

• Bridgeport Brass Co.'s Hunter Douglas Div. (Riverside, Calif.) is now producing molybdenum seamless tubing by cold extrusion methods that eliminate the formation of oxides. Tubing in the 1- to 6-in. diameter range in lengths over 5 ft. are the sizes considered feasible. Wall thickness of 0.030 to 0.125 in. have been produced.

• National Cylinder Gas Co.'s Tube Turns Div. (Louisville, Ky.) has produced what is believed to be the largest tee ever forged from aluminum. The barrel-type unit is 24 x 18 in. The tee, along with 36-in. diameter reducers and 24-in. elbows and returns, was made for the new AEC modified swimming-pool reactor at Oak Ridge.

• Gulton Industries, Inc. (Metuchen, N.J.) has successfully applied ceramic coatings to structural aluminum, as the first stage of a joint program with Lithium Corp. of America for the surface protection of metals subjected to temperatures above 1,000 F. The aluminum alloys will withstand temperatures of 1300-1350 F for prolonged periods without collapsing.

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Filter Cloth: Polymax filter cloth, made from high-density polyethylene, is a new offering of the National Filter Media Corp. (New Haven, Conn.). Tensile strength of the cloth is in the 50,000- to 100,000-psi. range; elongation range is 5 to 10%. Polymax has the chemical resistance of conventional polyethylene, may be exposed to temperatures of 230-240 F, softens at 260 F.

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Quick Couplings: Two firms are out with new quick couplings. One is for thin-wall steel and aluminum, the other for polyvinyl chloride pipe.

• Victaulic Co. of America (Elizabeth, N.J.) says its new coupling provides positive, leakproof connections for Vic-Easy grooved-steel and aluminum pipe ends. First, a Victaulic gasket is slipped over the pipe ends. Then, the coupling is fastened over top of gasket. Couplings will accommodate thin-wall pipe and tubing from 1¼- to 12-in. diameter and with working pressures to 1,000 psi. Standard gasketing materials are recommended for temperatures to 180 F, special materials for higher temperatures.

• B. F. Goodrich Industrial Products Co. (Marietta, O.) offers a new Koroseal PVC coupling that will take up to 10-degree misalignment in rigid PVC pipe joints. The coupling is available for 2-, 3- and 4-in. pipe.

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Straight-Form Thermometer: A new straight-form thermometer, for installation on tops of tanks and boilers where the standard angle-form is impractical, has been added to line of stainless-steel thermometers made by W. C. Dillon & Co. (Van Nuys, Calif.). Adjustable mounting nut makes it possible to lock the thermometer head in any position. Head sizes: 3 and 5 in. Stem lengths: 2½ to 72 in. The thermometer is available in six Fahrenheit ranges (from —40 to 1,000 F) and four Centigrade ranges (from —10 to 300 C) with an accuracy within 1% over the entire range.

•

Magnetic Tape: Ampex Corp. (Redwood City, Calif.) says its new magnetic tape for telemetering, process control and computer systems reduces the problem of signal loss due to dropouts. The tape, made by Orradio Industries (Opelika, Ala.), is said to have a smoother, more uniform surface than other tapes, gives increased head life and less oxide deposit.

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Eye Protection: Watchemoket Optical Co. (Providence, R.I.) has a new safety goggle, dubbed Tuc-Cup, that fits over all prescription glasses. Goggle has a visor for over-eye protection, side shields for side and under-eye protection.

Another form of eye protection is offered by Haws Drinking Faucet Co.'s (Berkeley, Calif.) model 8933, a new emergency fountain that washes both eyes and face. Two streams flush the eyes while jets from a ring wash the entire face. Unit may be wall or pedestal mounted for hand or foot-treadle operation in conjunction with an existing water supply.

•

Booster Vacuum-Pump: The new B-12 high-capacity, oil-diffusion booster is the latest addition to NRC Equipment Corp.'s (Newton, Mass.) line of vacuum pumps. The unit has a 12-in. inlet diameter, produces pumping speeds of 5,200-6,000 cfm. at pressures from 0.8 to 5 microns Hg. B-12's forepressure tolerance of 900 microns makes it useful in series with high-vacuum diffusion pumps where maximum gas handling capacity is required, says NRC.

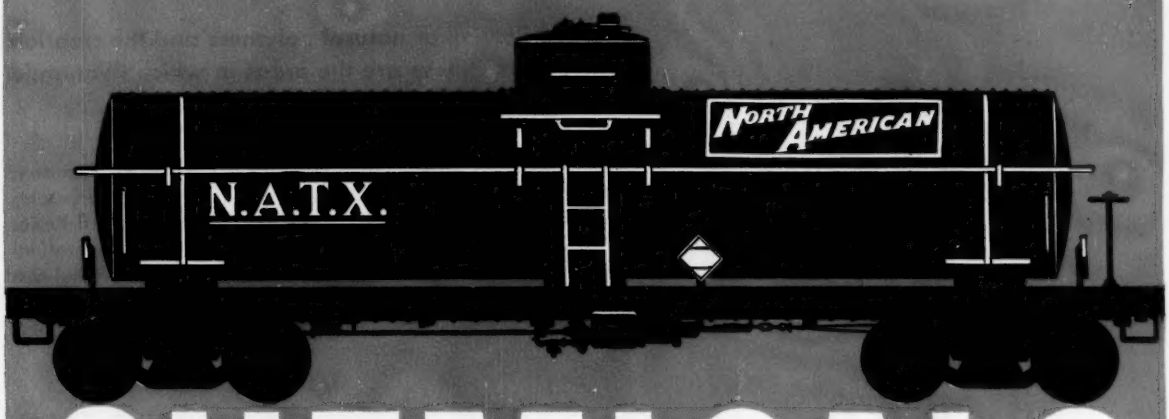
•

"Bin-Dicator": To permit use where severe conditions of vibration and high stress on paddle and shaft assembly exist, the Bin-Dicator Co. (Detroit) has redesigned its Roto-Bin-Dicator. The unit has a new low-torque motor and gear reducer, improved mounting.

•

Water-Saving Condensers: For large air-conditioning and refrigeration systems, Carrier Corp. (Syracuse, N.Y.) has developed two new condensers that, it says, will eliminate a cooling tower and condenser-water piping in many built-up central systems. One type is an evaporative condenser that uses a new method of wetting coils with vaporized water, draws heat from the refrigerating system, is offered in 13 sizes for capacities ranging from 5 to 250 tons. The other type is an air-cooled condenser, dissipates heat from the refrigerant directly to the air, requires no water, comes in seven sizes for capacities of 2 to 38 tons.

THIS CAR DELIVERS



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CYANAMID—and

Life on the Chemical Newsfront

The modification of natural polymers and the creation of new ones—these are the areas in which Cyanamid is active in "big molecule" chemistry.

Of the Cyanamid divisions that participate in polymer chemistry, none is centered so completely upon the practical developments of long-chain and cross-linked molecules as the Plastics and Resins Division. Polymers and polymer systems are offered for applications ranging from flexible surface coatings to extra-hard molded and cast plastics. Cyanamid's extensive research and development in plastics technology has resulted in the following well-known product lines:

MOLECULE MAINTENANCE
"Giant" long-chain and cross-linked molecules are often subject to gradual deterioration through the action of atmospheric oxygen and ultraviolet light. Cyanamid has developed antioxidants and ultraviolet absorbers which combat these destructive influences and greatly prolong the useful life of plastics and elastomers.

RUBBER BRAVES THE WEATHER—yet retains its appearance, strength and flexibility through years of use thanks to highly effective antioxidants. Cyanamid Antioxidant 2246® and Antioxidant 425® not only satisfy oxidation-protection requirements of all types of natural and synthetic rubbers, but are also nondiscoloring and can be used with the whitest of rubbers.
(Organic Chemicals Division)

AN INVISIBLE SHIELD against invisible destruction—that's the role of Cyanamid's ultraviolet absorbers as they convert ultraviolet rays to harmless heat. As a result, polymers, such as this plastic hose, retain their color, strength and flexibility for greatly increased periods even through severe exposure conditions. Cyanamid's UV 9* Ultraviolet Absorber, for example, has greatly expanded the application possibilities of polyvinyl chloride, polyester resins, styrene polymers and other plastics. (New Product Development, Dept. D) *Trademark

the world of "Big Molecules"

BEETLE® Urea Molding Compounds
LAMINAC® Polyester Resins
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CYCOPOL® Copolymer Coating Resins
CYZAC® Coating Resins
MELURAC® Melamine-Urea Adhesives
URAC® Urea Adhesives
CYMEL® Melamine Molding Compounds and Laminating Resins
CYMAC® Methylstyrene Molding Compounds

(Plastics and Resins Division)

BUILDING BLOCK AND MODIFIER for giant molecules is Cyanamid's Acrylonitrile. As a building block, it yields diverse products such as the synthetic fibers used in luxurious sweaters and blankets. As a modifier, it reacts with natural polymers such as proteins, starches and cellulose, improving their physical and chemical properties, thereby greatly widening their range of applications. Many derivatives of Acrylonitrile serve as monomers in practical applications — Acrylamide, for example, used in water-sensitive polymers.

(Organic Chemicals Division)

AN INCREASINGLY POPULAR POLYMERIZATION TECHNIQUE to build large molecules is the emulsification of monomers in aqueous solution, permitting rapid, controlled polymerization at moderate temperatures. Cyanamid's AEROSOL® Surface Active Agents are ideal in this application, providing excellent monomer solubilization, emulsion stability and resistance of dried polymer films to water spotting.

(Industrial Chemicals Division, Dept. D)

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These remarkable barges were built by INGALLS for Diamond Alkali Company to withstand pressures of up to 300 lbs. per square inch. They are equipped with a system of relief valves and other necessary devices that meet all requirements of the U. S. Coast Guard and the A.B.S.

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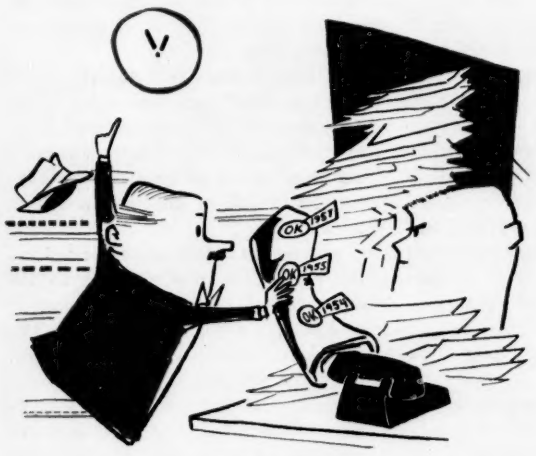
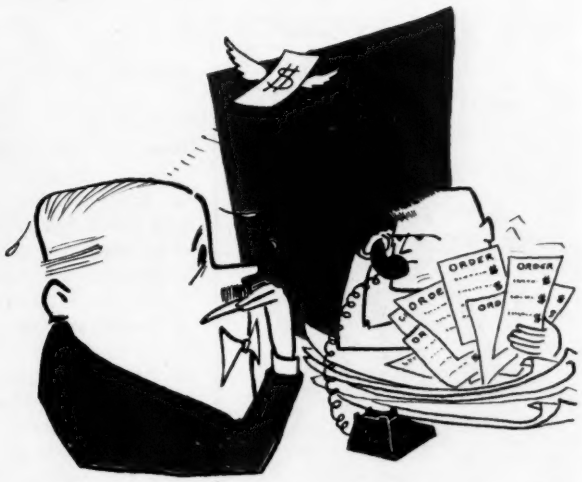
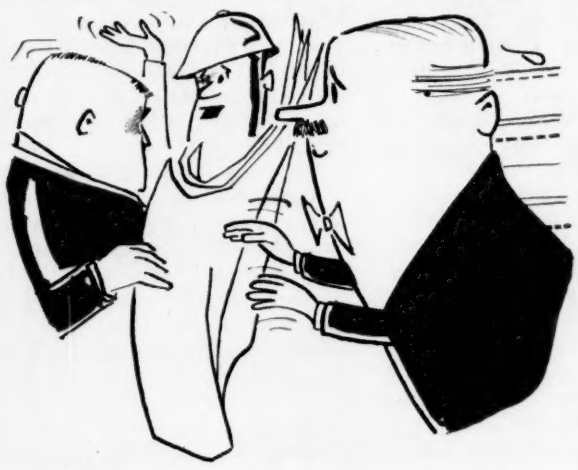


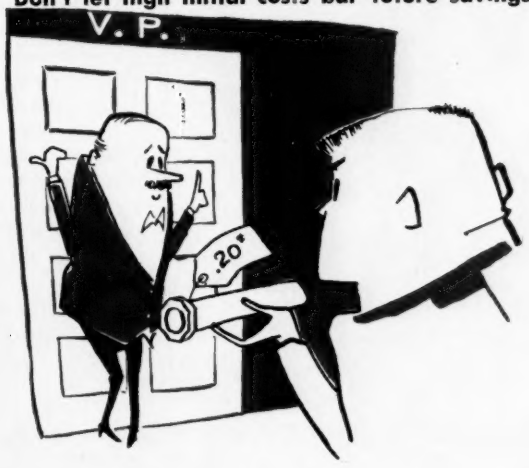
Don't wait too long to get project started.



Don't let high initial costs bar future savings.



Too many "cooks" brew confusion.



Give your project-head free rein to make decisions.

Do's and Dont's of Crash Engineering

Slide rules and shovels are moving at fever pace this week as Catalytic Construction Co. (Philadelphia) bears down on a job that it has promised to finish by December 1. Since the afternoon of April 16, when disaster struck Monsanto's parathion plant at Nitro, W. Va., production of the insecticide has been shut off —leaving it to engineers to get it going again. Knowing that its own staff was not large enough to handle the job, Monsanto looked to an engineering firm, signed a contract with Catalytic on June 10 for a new plant at Anniston, Ala.

Monsanto's parathion project is typical of a trend to faster engineering and construction. In fact, the trend has gathered such momentum in the past few years (*CW, Oct. 9, '54, p. 40*) that a new term is creeping into the vocabulary: crash engineering. And many engineering firms, such as Stone & Webster, say they've been "crashing" for years. Like its research analogue (*CW, Feb. 23, p. 58*), crash engineering is an unpopular term with chemical companies, seems to connote poor planning. Monsanto strenuously denies that its parathion plant replacement is a crash project, says that it would be done on the same schedule even if it were just an expansion facility. The name fits from Catalytic's point of view, though. To them, it means speed, not confusion.

The crash program is distinguishable from the routine job by a greater overlapping—and occasional

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omission—of normally chronological steps between research and production. And the companies that can do this without calling in an engineering company are rare indeed. That's why *CW* surveyed a number of the most experienced firms in the engineering-construction field last week. The opinions gathered shed a good deal of light on how chemical companies could help themselves in such programs, and also substantiated the fact that crash engineering does have a place, is highly desirable in certain situations.

Why Crash? The reasons for deciding on a crash program have to be strong ones in light of the cost and frenzy involved. Crash engineering is often necessitated by a scientific breakthrough. This is the case when a fat market is waiting for the output of whichever firm gets into production first. And the reputations of some companies demand that they be the first out with a new product in the field of their specialty, even if its long-range value is still uncertain.

Even with an old product, there is often a strong financial motive to go into a crash program. Refinery operators, for example, are more and more willing to work out bonus-and-penalty contracts, offer as much as $1500-2000/day for completion ahead of schedule. This makes sense when you consider that each additional day of operation means, say, $10,000 in the operator's pocket.

Probably the most obvious motivation is the replacement of facilities necessitated by a production-halting calamity. In addition to getting back onstream just as soon as possible, the company is also interested in updating a process by re-engineering its obsolete parts. And a change of location means that the problem is more than one of merely following old plans.

What To Do: Whatever the reason behind it, a crash program ought to be handled differently in some ways, from normal jobs. Here are four rules which were pretty generally agreed upon by the engineering companies surveyed as important for the chemical company to keep in mind:

- **See an engineering company fast.** As opposed to a routine construction job where the company should have firm, clean-cut plans before approaching the contractor (*CW, Jan. 8, '55, p. 38*), the crash program (especially when it involves a lot of engineering) will move a lot smoother with the early guidance of an experienced engineering firm.
- **Hire just one firm directly.** When speed is vital, communications channels must be as simple as possible. If specialized aid is needed, the engineering firm, acting as agent of the company, will call in the best consultant it can.
- **Appoint a decision-maker** to head the project. Normal channels to the contrary, field decisions must be made if deadlines are going to be met. The chemical company should give its man in charge full rein to get the job done (within specified broad limits), including assurance that some mistakes are expected to be unavoidable, that top management is behind him.
- **Expect the unexpected** and be willing to pay for it. A crash program is admittedly expensive and chaotic. Even the best plans have to be revised on the run, and a willingness to pay for improvements as they come to light will result in better relations, a better job.

Why Do It This Way? Though some of these rules may not appeal to the company, there are sound reasons (many born of sad experience) behind them. Many a crash program, for instance, wouldn't have been one in the first place if the company hadn't hesitated too long before seeing an engineering firm. A common mistake is to underestimate the time needed for contract negotiation. And the company can save itself many headaches by consulting with the people who are going to do the work before it ties up too much time and money in the project.

A particularly vexing situation arises when the chemical company engineers a process design at great cost and exertion to itself only to have the contractor find that numerous changes must be made. The additional delay may often be accompanied by renegotiation of the contract, resulting in another cost to cap the succession of wasted time and effort. Of course, the capabilities of the chemical company may bend this rule, but almost all run into situations where they need more man-power or know-how, and they should face up to the fact right at the outset.

One reason why companies might hesitate to approach an engineering

chemicals at work

Hospitals today are exceedingly sterile conscious. Chlorine continues to play a big role in modern sanitation.

12% of the mothers died before chlorine came along!

In the mid 19th century, before anyone knew much about germs and infection, deaths from "childbed fever" were notoriously high.

Ignaz Philipp Semmelweis, a Vienna doctor, was among the first to recognize this as a blood poisoning caused by lack of sanitation. He arrived at his conclusion when one of his colleagues accidentally cut himself with a scalpel while performing an autopsy, and died shortly after. Semmelweis alone recognized the supreme importance of the event: here was a *man* who had succumbed to childbed fever!

To test his theory, Semmelweis ordered stringent disinfection procedures in the maternity clinic under his supervision. The mortality rate dropped dramatically . . . from 12% to 3% in less than a year. In the ensuing year, it was further reduced to about 1%.

An important feature of this sanitation was that he prescribed the use of chlorine water for disinfecting hands and instruments. While other disinfectants have been developed since, sanitation continues to remain one of the chief uses of chlorine . . . not only in hospitals but in schools, public institutions, water supply systems, on the farm and in the home.

Major industrial users of this indispensable element include producers of organic chemicals, textiles, pulp and paper, bleaches, rayon, plastics and many other goods. A leading merchant producer of chlorine, Columbia-Southern also supplies caustic soda, soda ash and related chemicals.

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CHLORINE, ALKALIES, AND RELATED CHEMICALS

OFFICES IN PRINCIPAL CITIES

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

firm is the question of secret processes. But, as Ford, Bacon and Davis points out, engineering firms need company trust to stay in business. They deal in confidence at all times and don't wish to endanger their position.

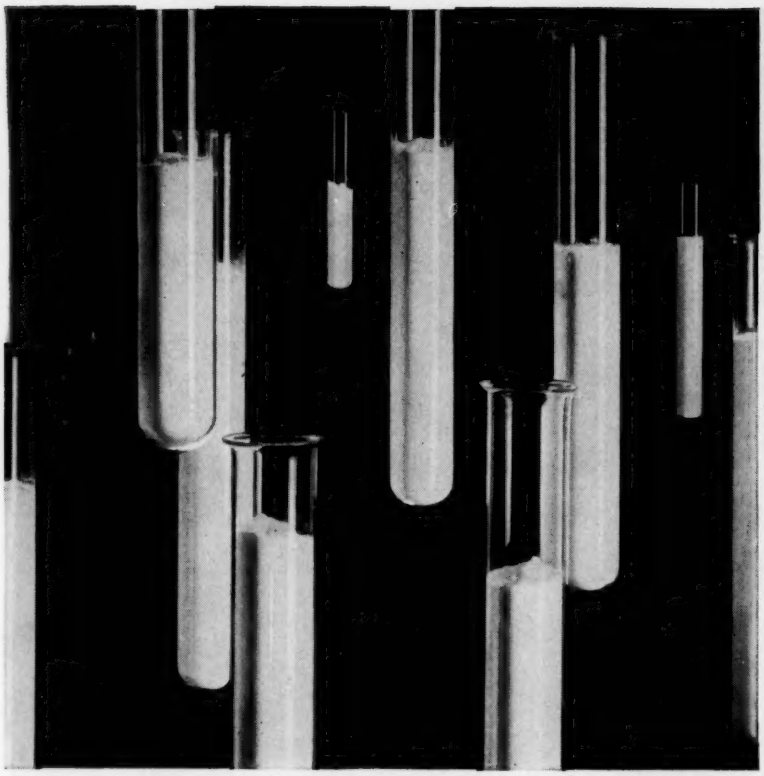
The practice of hiring two or more firms to do specialized portions of the project (e.g., engineering and construction), may be best when just the right job is desired, but it tends to snarl communications as the tempo picks up. And buck-passing, whether intentional or not, is hard to avoid under such an arrangement. "It just stands to reason," says James Tathwell of Fluor Corp., "that the more people you have to deal with, the more confusion you have."

A responsible engineering firm knows what it can do best and where it needs help. By allowing it to act as the chemical company's agent, the latter can be sure that specialists—in the form of consultants or even other firms—will be brought in when necessary.

The Old Way May Not Work: If the chemical company is accustomed to working most problems out in committees, it may find its crash program wrapped up in red tape and indecision. Because the nature of the job demands speed, fast decisions are necessary. Even a good man makes an ineffective project head if he is forced to consult someone about each decision. He should be allowed access across departmental lines, even if company policy dictates otherwise. Any morale problems arising from a change in the normal routine can be minimized by a good personality in the key man.

Finally, a nervous outfit had better not get mixed up in crash programs at all. During completion of a rush job —which will always be expensive— highly desirable design improvements may turn up. If these are expected, though unforeseeable, the company will save itself a lot of nail-chewing when they do come up. Engineering firms trade heavily on their reputations and the trust clients put in them, and they see cost-minimization as one of the principal ways to keep this trust.

All in all, everyone agrees that the crash program is going to cost money. But when other considerations make it a necessary step, it's best to go about it the right way, even if that way doesn't fit into company patterns.



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PROCESSES

Rutile from Ilmenite: Low-grade titanium ore can be made high-grade, according to a recent patent application (Australian 22,815/56) by Commonwealth Scientific and Industrial Research Organization (East Melbourne, Australia). Ilmenite ($FeO \cdot TiO_2$) is converted to rutile (TiO_2) by a series of steps beginning with heating to 500-1000 C in the presence of carbon, pyrite and sulfur vapor (proportioned to insure the absence of free oxygen). In 0.5-10 hours the ilmenite decomposes to an intergrowth of rutile crystals and iron sulfide-iron oxide phases. Leaching with sulfuric acid at 20-110 C selectivity removes the iron compounds, leaving a skeletal arrangement of rutile crystals. Significance of the process lies in the comparative abundance and low cost of ilmenite (*CW, July 20, p. 78*).

•

Gelling Agent: A report by the Natural Rubber Bureau (Washington) states that rigid controls in foam manufacturing can be minimized by use of a heat-sensitive gelling agent such as Polyglycol HS.35/40. Among the advantages claimed: proportion of agent needed is not critical; no allowance must be made for variations in room or latex temperature; deammoniation and maturation of the latex compound is not essential; finished foams have high stability at room temperature.

•

Polycarbonate Patents: A series of recent U.S. patents underscores interest in development of polycarbonate processes. They are 2,799,664, 2,799,665 and 2,799,667, assigned to British Celanese, Ltd., and 2,799,666, assigned to Eastman Kodak. The last joins several other patents in the same area held by Eastman (*CW, June 1, p. 57*).

•

Powdered Vinyl: Dehydrated polyvinyl acetate emulsions are described in U.S. Patent 2,800,463, assigned to Shawinigan Resins Corp. (Springfield, Mass.). The dry powder consists of unsintered particles (up to 5 microns in diameter) of PVAc with the original emulsifying agent dispersed throughout. It is redispersible upon addition of water. Object: saving freight costs by shipping dry chemical.

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WYANDOTTE CHEMICALS

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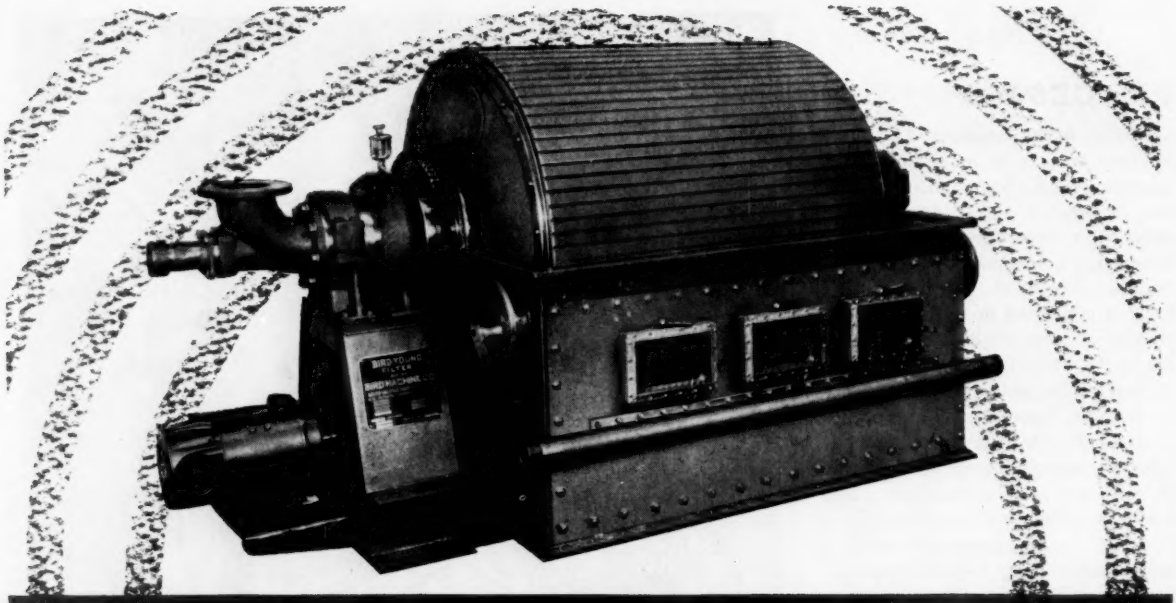

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BIRD

MACHINE COMPANY

Washington
Newsletter

CHEMICAL WEEK
September 7, 1957

Working-level export-import problems are taking the spotlight from the high-level tariff-and-trade policy shifts that Congress will be wrestling with when it reconvenes in January. And these working-level decisions on tariff matters are often just as important as are any debates over the laws themselves.

Detailed data on chemical exports will be available on a continuing basis, starting later this month. The House Government Operations Committee has needled the Treasury Dept.'s Customs Bureau into releasing details on individual shipments as to who is the shipper, what quantities and tonnages of a commodity he is exporting, and the port of destination.

A chemical exporter can now find out a lot more about what his competitors are shipping overseas than he could from looking at the monthly Commerce Dept. export summaries. Until the House committee got the new Treasury ruling pushed through last week, the Commerce figures were all that have been made public since World War II. The new figures will be screened both for security information and for standard business secrets such as price. But individual shipments will be much more fully described than they have been.

The House committee is now out to get customs to require more detailed reports on imports. Some importers have used legal loopholes to exempt their shipments from public notice if they enter the U.S. at certain ports—the Great Lakes area, for example. If the committee wins this one too, there will be more complete data on individual import shipments available for everyone to look at as well.

The lead and zinc tariff question will be considered by the Tariff Commission, where president Eisenhower unexpectedly referred it after free traders in the House sidetracked a last-minute effort to legislate new duties on the metals. Eisenhower has now agreed to ask the Tariff Commission to hurry a new recommendation. The commission had okayed lead and zinc duty boosts three years ago but saw them vetoed by the White House.

Customs simplification, something importers have been trying to get squared away for years, may finally be coming to a head. Treasury Dept.'s Customs Bureau has just started putting out the regulations to go with a law Congress passed last year. The object: to substitute a simple formula for fixing the value of imports in place of an antiquated procedure. Treasury has issued a list of several hundred items, including many chemicals (*see p. 21*) on which the new formula will not apply—if it would cut import duties more than 5%.

Oil imports control hearings start Sept. 10. Importing companies protesting against the voluntary formula set down by the White House will get their say. Capt. Matthew V. Carson, Jr., in charge of the program,

Washington Newsletter

(Continued)

will make recommendations after the hearings to Interior Secretary Fred Seaton, and then any variations from the formula will be announced. Indiana Standard, Tidewater, Standard of Ohio and International Refineries will be heard from first.

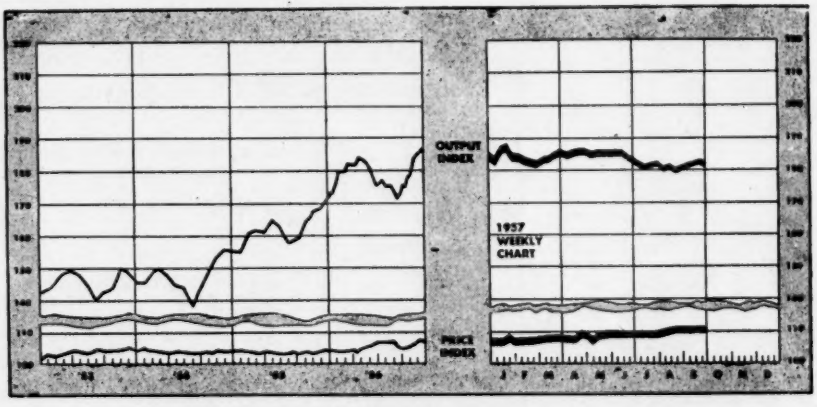
While the direct impact of the oil import situation on petrochemical production is small, the question of voluntary or mandatory import quotas could provide a precedent for application to chemical trade.

•

A reappraisal of federal coal-tar color control will get underway this autumn. This is assured by several long-simmering disputes that will coincidentally be reaching a crucial stage.

The Food and Drug Administration is forcing the issue. The agency will schedule public hearings soon on its proposal to remove from the market four widely-used coal tar yellows on grounds of injury to health of consumers. The hearings also will cover FDA's proposed new sweeping definition of coal tar colors.

FDA may ask the Supreme Court to clear up a dispute over interpreting its present powers. The agency has petitioned the Fifth Circuit Court for a rehearing of the court's order upsetting FDA's ban on use of FD&C Red 32 for coloring orange skins. The decree ordered the agency to set a safety tolerance limit allowing use of the dye on food. FDA says the court's order conflicts with a previous circuit court ruling.



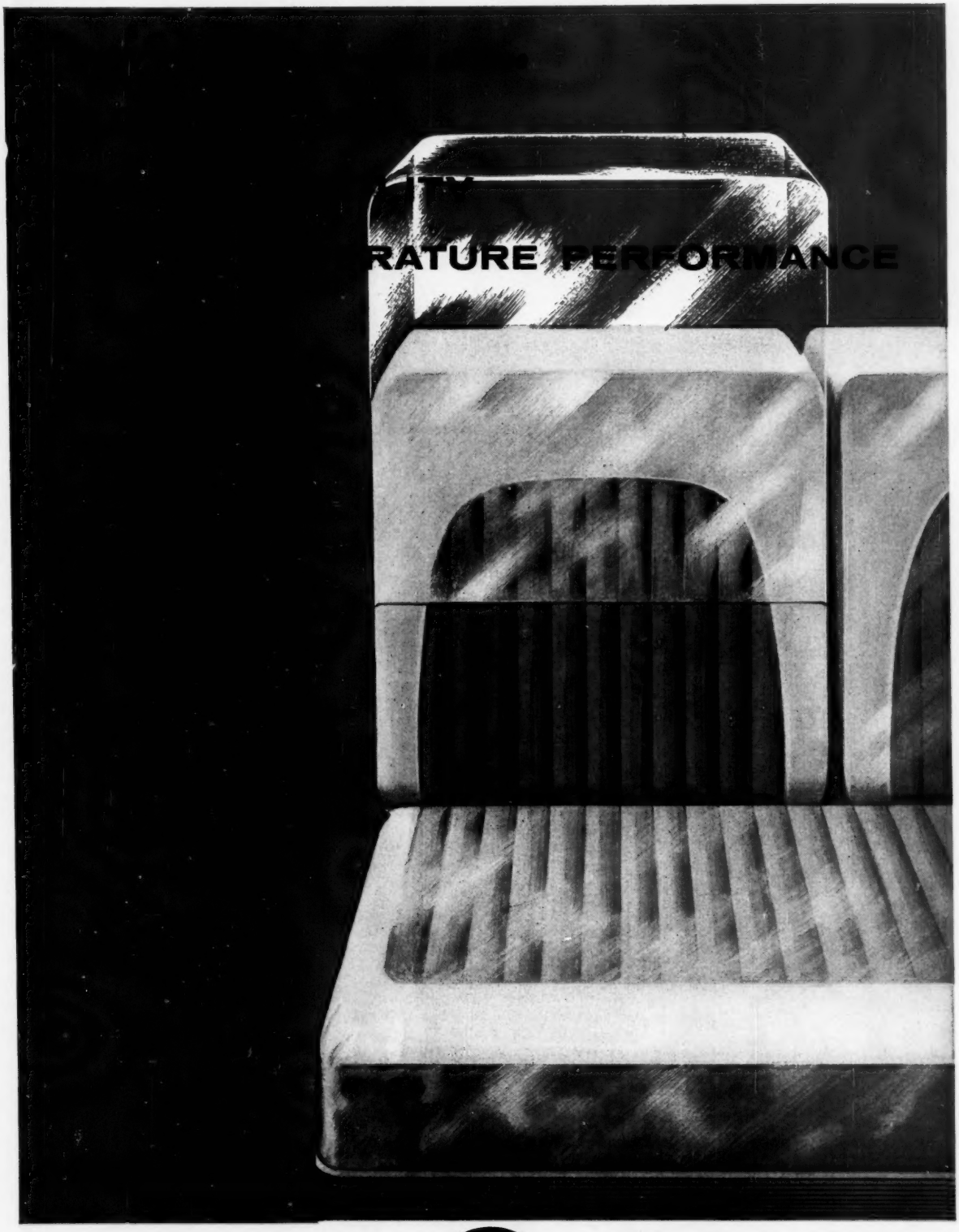
Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	182.0	181.5	173.1
Chemical Week wholesale price index (1947=100)	110.9	110.8	105.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	42.53	43.48	47.51

MONTHLY INDICATORS—Trade (Million Dollars)

	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	28493	29117	28180	54214	53985	50071
Chemicals and allied products	2004	2100	1872	3735	3716	3434
Petroleum and coal products	2818	2900	2629	3506	3346	3033



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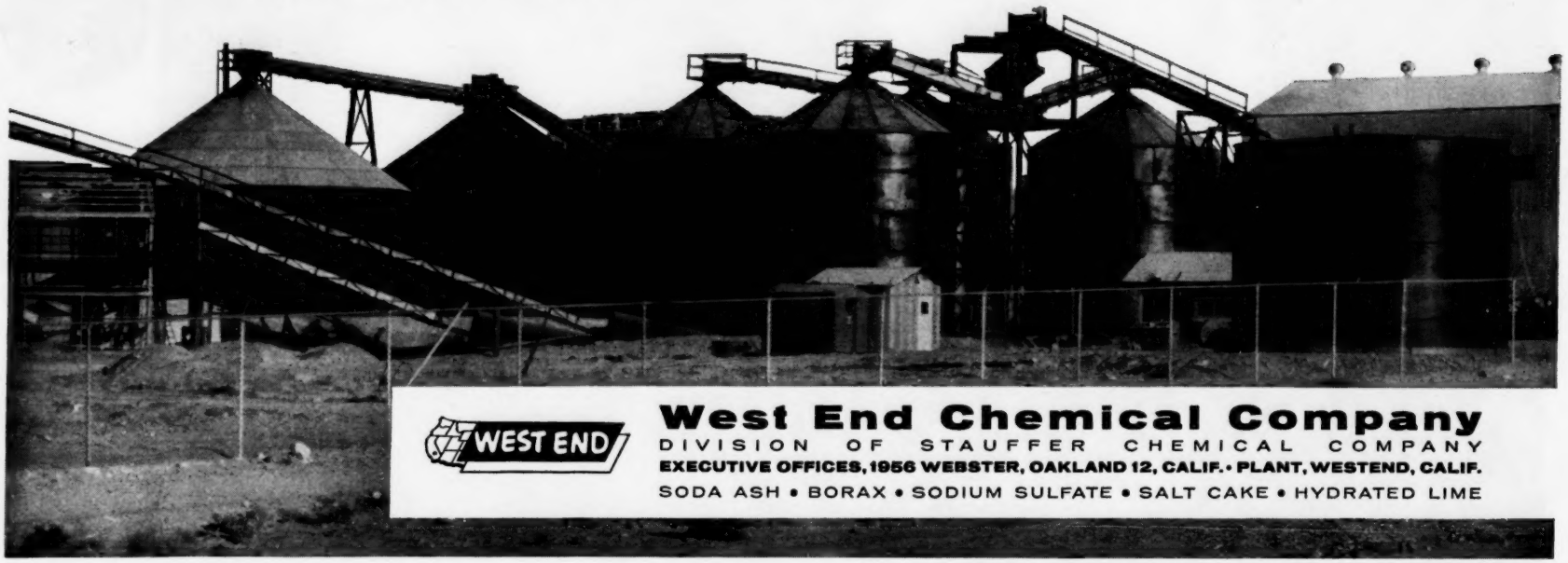

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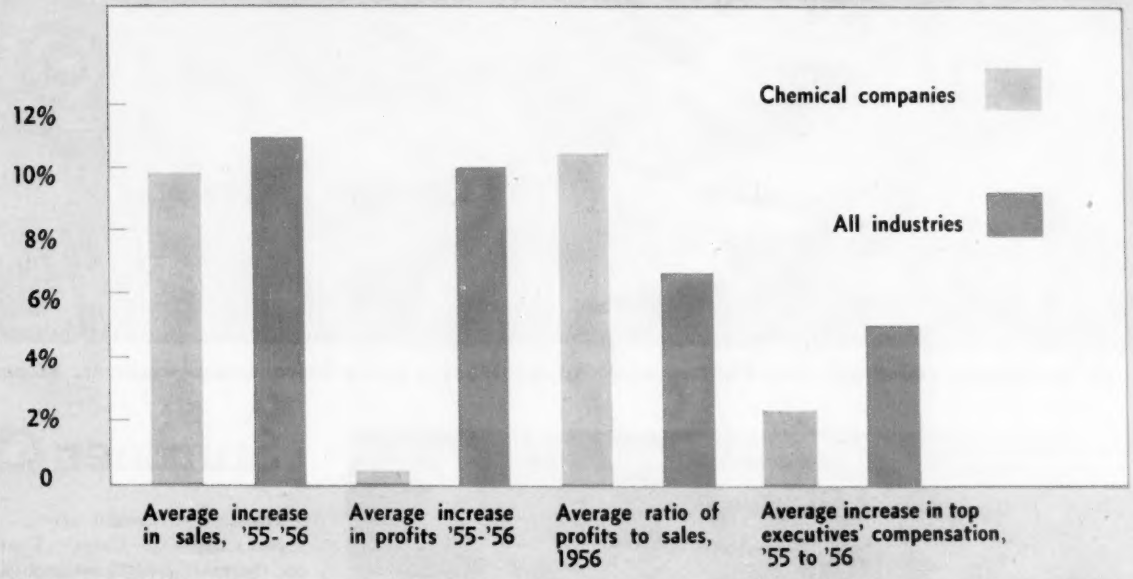
BRINGS SMALLER SALARY RISES FOR TOP EXECUTIVES



Top Chemical Executives Lag on Pay Scale

Relative to their counterparts in 17 other major industries, chief executives of 53 leading chemical companies lost ground in average compensation, according to compilations released this week by McKinsey & Co. (New York), management consultants.

These figures—computed by McKinsey principal W. Cameron Caswell from 641 companies' reports to the U.S. Securities & Exchange Commission—show that the overall increase in compensation for the chemical companies' chief executives was 2.4%, while the all-industry average stipend rose by 5.1% (*chart, above*).

Retreat on All Fronts: In certain volume-of-business categories, chemical company presidents pocketed notably higher paychecks than in 1955 (*table right*); but slipped back relative to the No. 1 men in other industries. Among the 18 industrial groups, top chemical men's average compensations ranked ninth in the $3-million net profit class, 10th in the $10-million profit category, and 11th in the $40-million profit bracket.

Increased compensation in 1956 went to 52.9% of the top chemical executives and to 47.6% of the chief executives in the 17 other industries studied. Lower compensation than in '55 went to 26.4% and 23.8%, respectively.

In the chemical companies, there was less of a gap between the top executives' compensation and the sums paid to second-, third- and fourth-ranking executives than was the case in most other industries. Compensation to No. 1, 2, 3 and 4 executives in the chemical companies averaged out in a 100-71-60-54 ratio; for all 641 companies, the average ratio was 100-70-57-51.

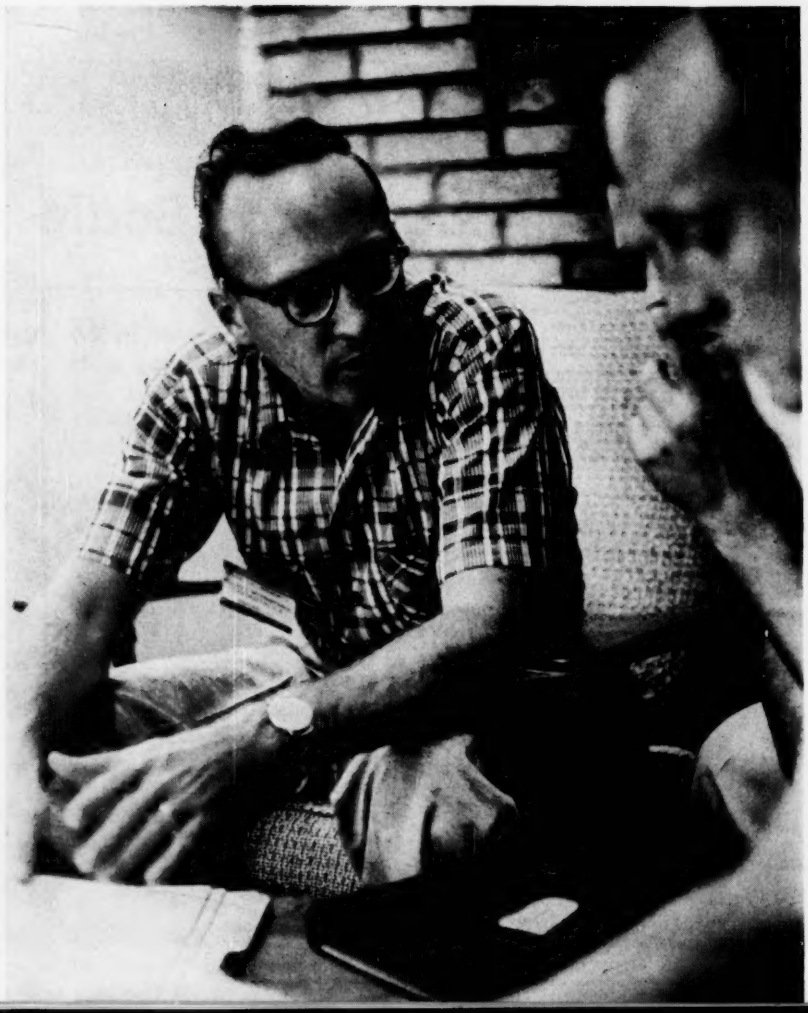
How Bosses Fared in '56

(Trends in compensation of 53 chemical companies' chief executives. Computed by McKinsey & Co. from companies' reports to SEC.)

Companies reporting:	Compensation Trend-line Points 1955	1956
$ 3 million net profit	$ 71,000	$ 77,000
$10 million net profit	100,000	108,000
$40 million net profit	150,000	159,000

Caswell's conclusion: As in the previous year, the chemical industry doesn't pay its chief executives well for their difficult task of making profit gains.

At presidents' roundtable, AMA's Lawrence Appley leads a group of company presidents in an informal



Summer Class

Having exchanged the rolling, green campus of Colgate University for the more austere settings of their offices, 28 company presidents last week were taking stock of knowledge gained at American Management Assn.'s presidents' roundtable (see photos)—an annual highlight of AMA's summer program at the upstate New York university.

AMA's summer program in three years has provided management training in the form of workshops and seminars for an average of 225 management men per week. The presidents' roundtable is held for one week in July and again in August.

One of this year's participants was Even Collinsworth, Jr., board chairman of Velsicol International and executive vice-president and general manager of Velsicol Chemical Corp. (Chicago).

In Collinsworth's opinion the greatest good to be had from the round-

Velsicol's Collinsworth makes a point during a bull session, where registrants have rare chance to 'let their hair down.'

PHOTOS—LIONEL CRAWFORD

discussion of management problems. Scene: the association's summer program at Colgate University.

for Top Brass

table was the "cross stimulation of ideas" gained by association with presidents from other industries. He reveals that from an equipment-company president he got the idea of a vertical communications system for decentralized operations. From the chief executive of an electronics firm came the idea for a positive approach to cost reduction.

"After all," Collinsworth says, "the principles of management hold true for all industries alike at the top-management level. And, remember, if you're basic in the chemical industry, you deal in some way with almost every industry. It pays to know what executives in those industries are thinking. I can learn that here, because out of 28 registrants, Wyandotte's Bob Semple and I are the only chemical men."

Letting Their Hair Down: Turning his attention to the bull sessions that inevitably follow the evening dis-

Presidents continue discussion at morning break on lawn.

Despite a full day's schedule, registrants find time to reflect on previous sessions and plan for the next order of business.

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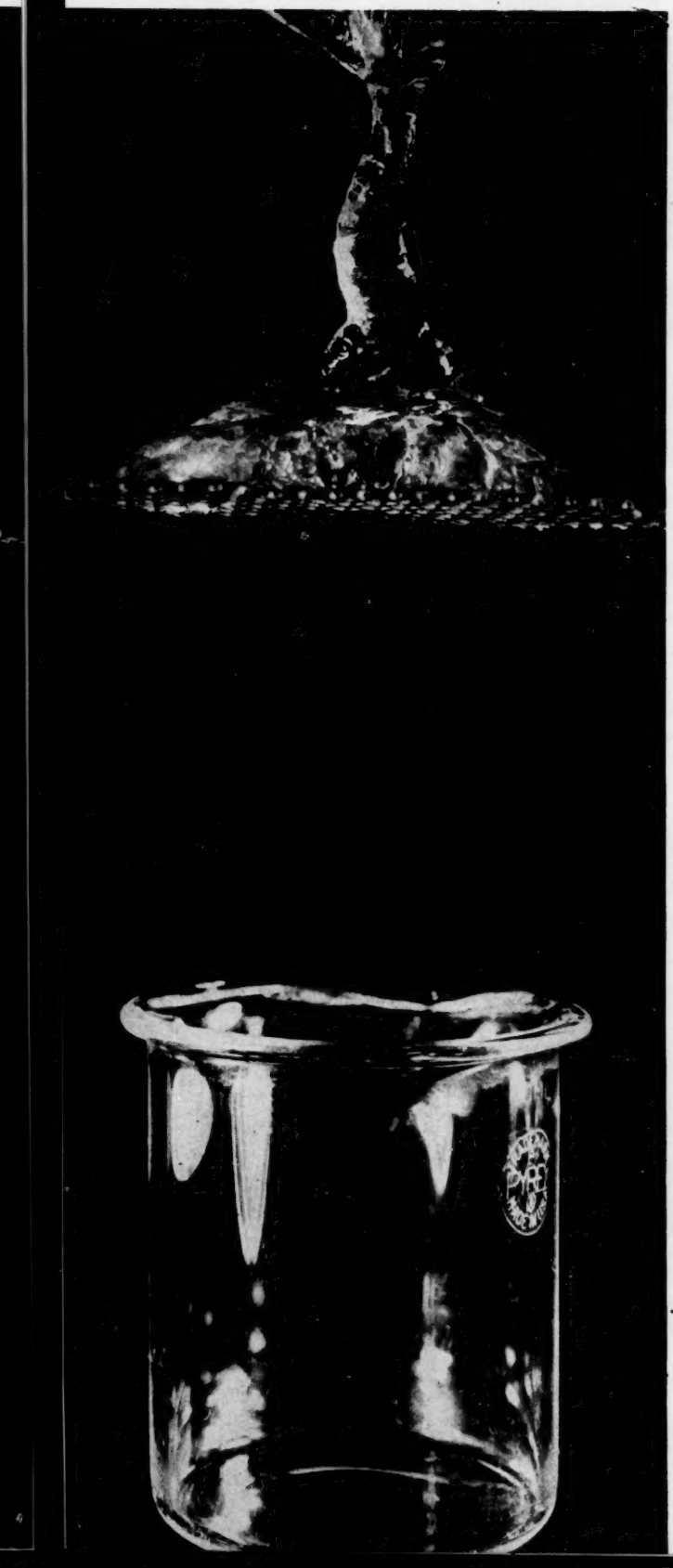

Hercules CMC holds the key to a Broad Viscosity Range

Today more and more research chemists think of Hercules® CMC when they think of viscosity control. The broad range of viscosity available in CMC makes it an ideal material to meet your requirements, no matter how specific they may be.

Three regular grades of CMC—low, medium, and high—are readily available to provide you with such viscosity differences as dramatized in the photographs at left. All of these samples were made up to a 3% total solids. Each sample is being poured on screens of identical gauge.

High-viscosity grades of CMC are in use, in general, where greatest viscosity increase is desired at lowest unit cost. Lower viscosity grades are preferred when the building of solids, rather than viscosity itself, is most important.

This versatile viscosity control agent is compatible with many water-soluble colloids to permit widely varied modifications for specific end uses. We'll be glad to discuss with you how CMC can be best used in solving your own viscosity problems.

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ABOUT THE PHOTOGRAPHS . . . Bernard Hoffman, well-known science photographer, used a gamma micro camera with a Zeiss 32 mm macro tessar lens in taking these photographs. He worked at a distance of 2½ inches from the subject and shot at a speed of 1/10,000th of a second.

KEY: Extreme left: 3% CMC 70 low-viscosity. Center: 3% CMC 70 medium-viscosity. Right: 3% CMC 70 high-viscosity.

VE57-2

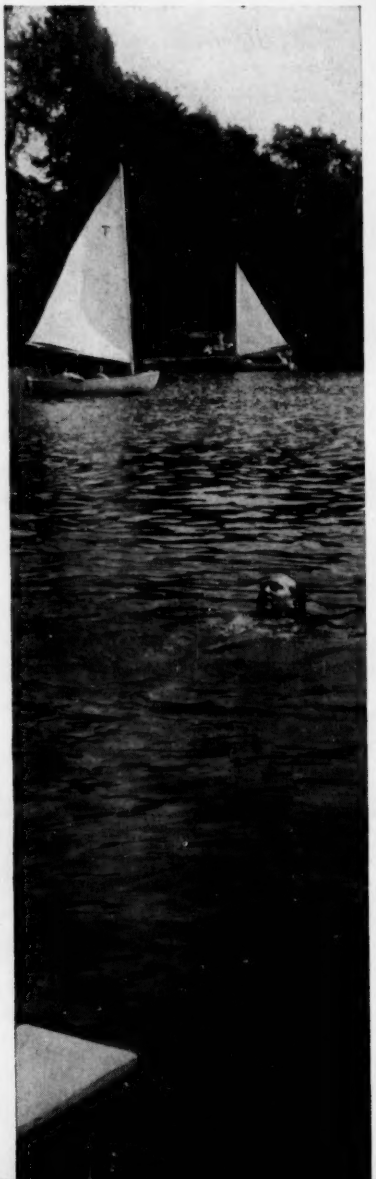
Following morning roundtable discussions, registrants gather in the dining hall for lunch.

cussion sessions, Collinsworth reflects: "A chief executive's job is a lonely one. You can't let your hair down with your own employees, but here, in the bull sessions with the fellows, you get that opportunity. I'd say this is one reason a lot of the fellows attend the roundtables."

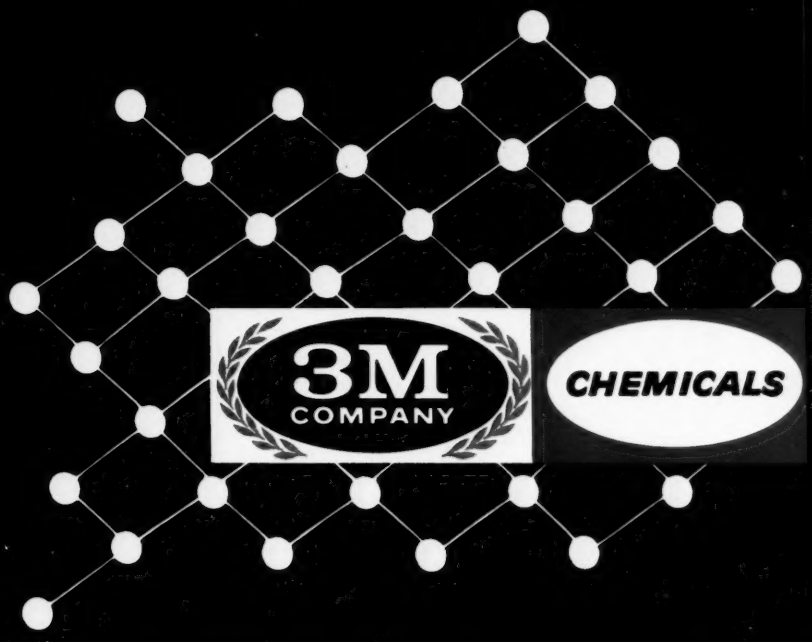
Collinsworth—holder of a BS degree from the University of Tennessee and a Harvard MA in business administration—feels that AMA has helped promote management as a profession. "This concept is necessary, if we are to successfully compete with foreign firms. After touring a number of foreign plants, I'm convinced that management is one area in which we really can excel; and this becomes more important with spread of the common-market idea."

That other executives share Collinsworth's opinions on management training is evident by the increasing number who take such training year-round throughout the country.

Registrants stop off at the fruit cart after lunch on their way to get ready for an afternoon of fun, including boating, water skiing, horseshoes, golf and . . .



. . . swimming. But after supper it's back to the roundtable for another two hours of discussing management problems.



New 3M Chemical Products Group opens new worlds of usefulness for materials you make and use

There's a new force in action in industry . . . the Chemical Products Group of Minnesota Mining and Manufacturing Co. Already this new organization of 3M divisions is producing unique new specialty chemicals.

These new 3M chemicals are opening exciting new worlds of use for materials you know—by extending their performance far beyond previously accepted limits; by bringing to them far greater chemical stability, virtually eliminating stain, contamination or corrosion; by giving them unusual flexibility, insulating ability, temperature range, adhesion, strength or durability.

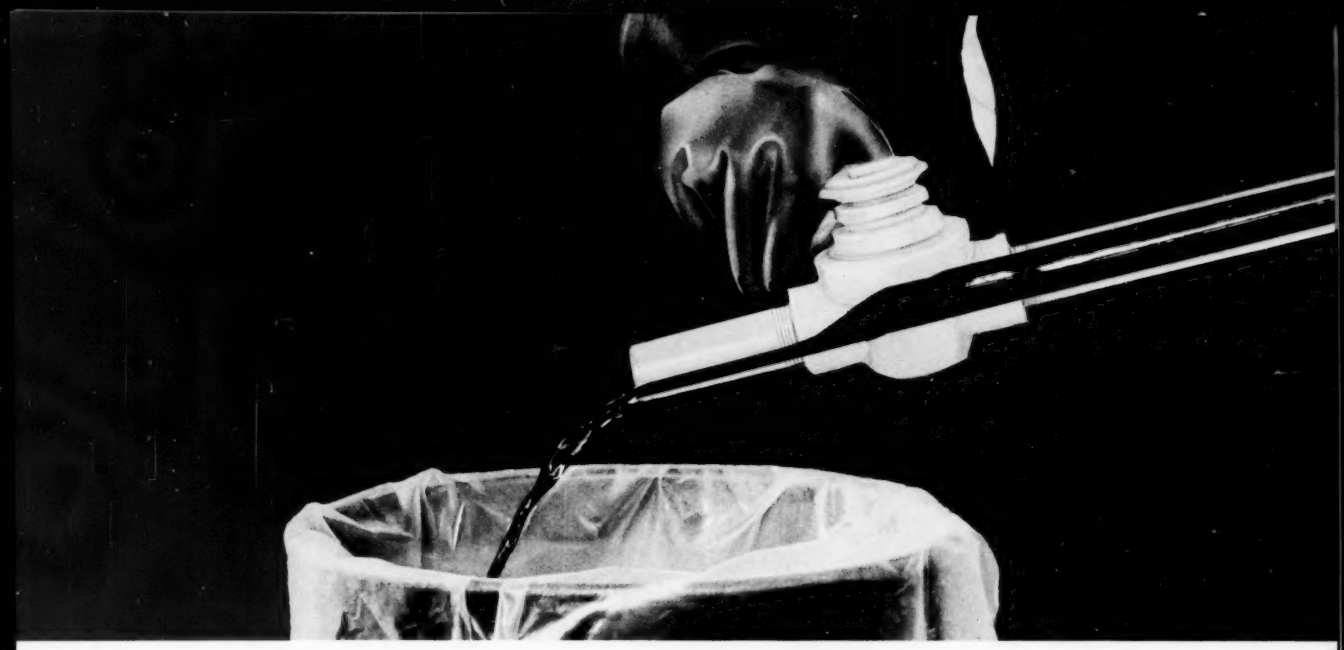
Textiles, paper, leather, rubber, metalworking, electronics, packaging, finishes, plastics, epoxies—there is hardly an industry that cannot benefit.

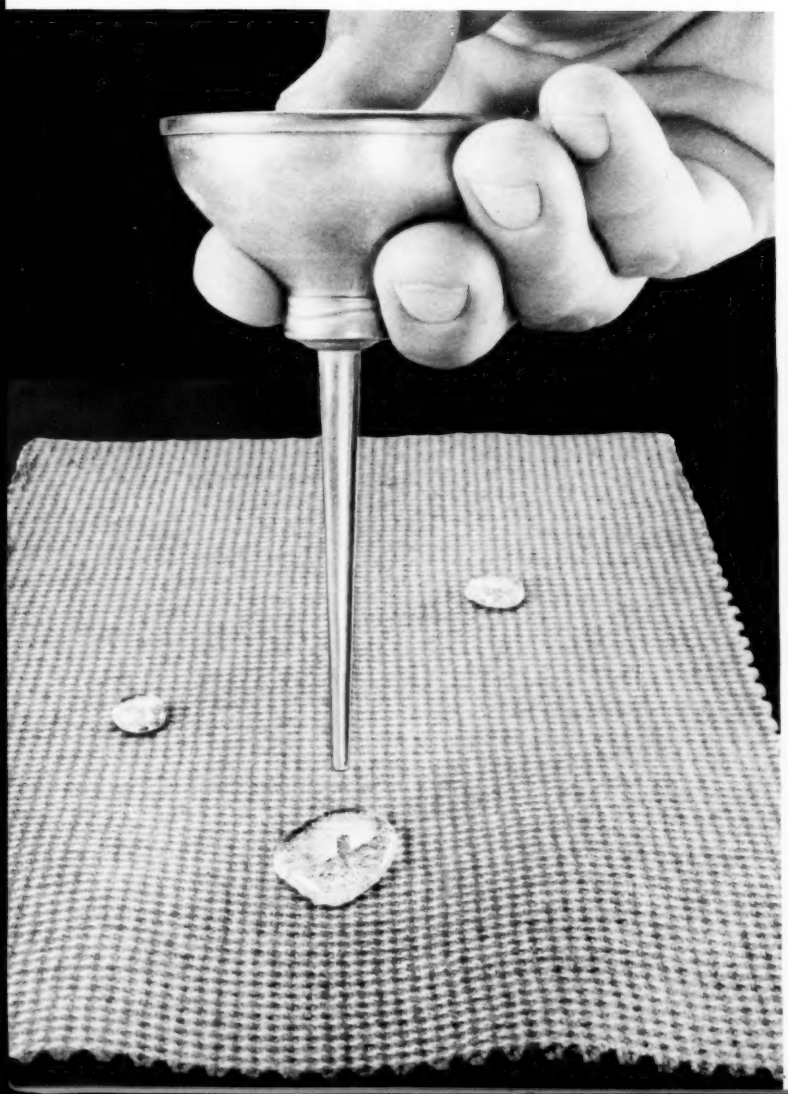
Some of these new 3M chemical products come from the new science of fluorochemistry, brought into practical focus by 3M. Others from sources as humble as the shell of the cashew nut. The result, a wealth of chemicals as varied as they are unique. But all benefit from the kind of chemical skill and research that has played a key role in the development of practically every 3M product since 1902.

The 3M chemical products described on the following pages are just examples. Backed by the exceptional laboratory and production facilities of 3M Company, the Chemical Products Group views countless new products and applications. All the more reason to look for the 3M name whenever and wherever you buy!

CHEMICAL PRODUCTS GROUP—MINNESOTA MINING AND MANUFACTURING COMPANY

FLUOROCHEMICALS DIVISION
IRVINGTON CHEMICAL DIVISION
JERSEY CITY CHEMICAL DIVISION
HASTINGS CHEMICAL DIVISION
COLOR & ACID DIVISION



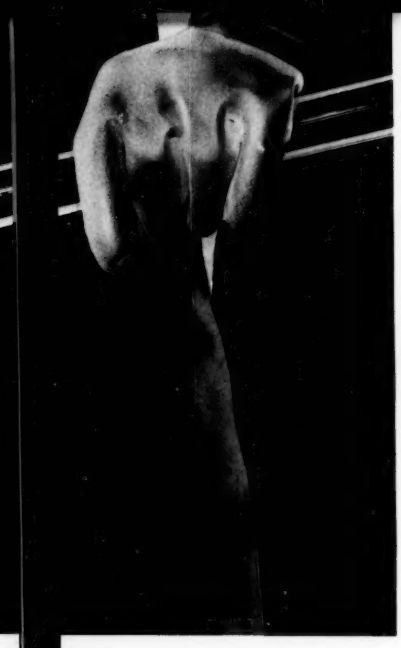


Chemicals opening new worlds of use for textiles, leather, paper

Fluorochemicals Division

From remarkable 3M fluorochemistry emerges totally new class of chemicals, unlike any othe made by man or found in nature. With their uniqu combination of chemical stability, surface prop erties and incompatibility with oil and water, the promise to change a great variety of things w make and use. Today's Fluorochemicals Divisio products include: "SCOTCHGARD"® Brand Stain Re pellers for apparel and upholstery textiles (A-1) for packaging papers, asphalt laminate papers an linerboards (A-2), and for suedes and leather (A-3); fluororubbers (A-4); inert fluids for coo ing and insulating uses (A-5); intermediate chem cals (A-6); and specialty surfactants (A-7) Tomorrow's uses are myriad. Investigate 3M fluorochemicals. They well may make a world c difference for you.

INVISIBLE SHIELD of fluorochemical gives this fabric protection never before possible. "SCOTCHGARD" Brand Stain Repeller repels oil as well as water-based stains from every fiber. Applied to leather or paper, it actually resists oil and water penetration, too.



Chemicals opening new worlds of use for film

Jersey City Chemical Division

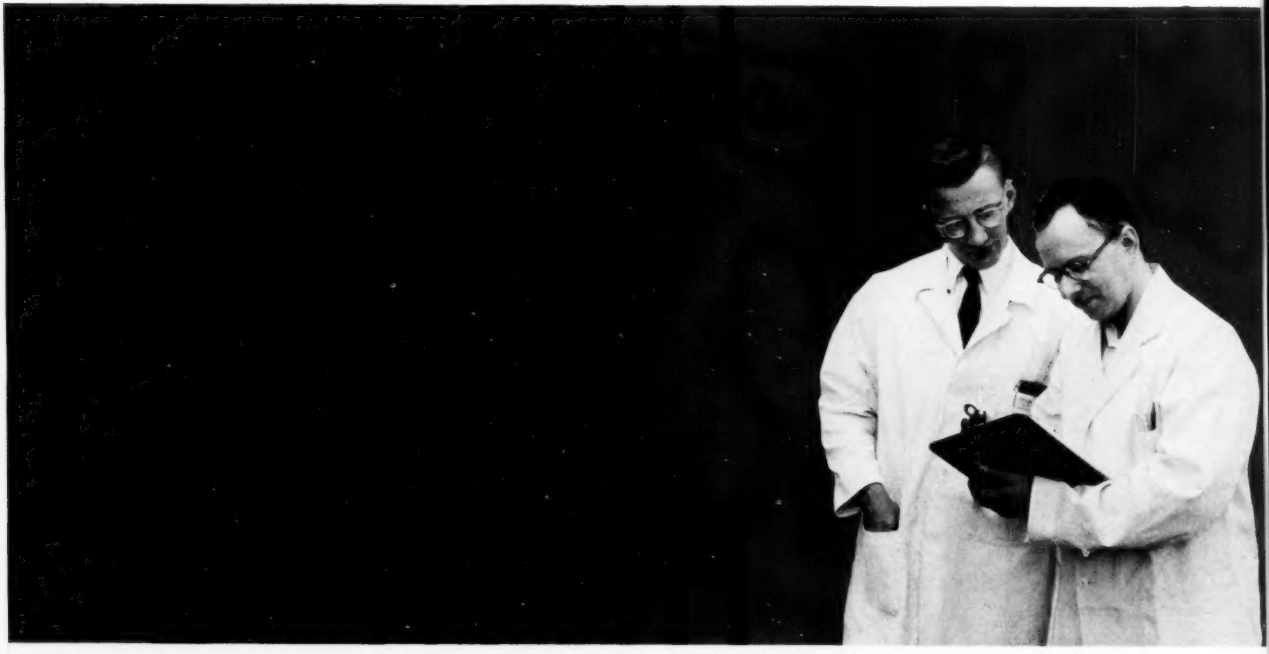
Terms like "film" or "plastic" have new significance. The reason? – the unusual performance properties of Jersey City Chemical Division halofluorocarbons: chemical inertness in the most corrosive situations, stability over temperatures ranging as widely as −320°F. and +390°F., high impact and compressive strength, low cold flow, exceptional dimensional stability, zero moisture absorption, high dielectric strength. As films and plastics (B-1)*, as KEL-F® Brand resins (B-2), dispersions (B-3), elastomers (B-4), lubricants (B-5), and inks (B-6), these 3M chemical products daily are replacing conventional materials, bringing new solutions to critical problems. Even now, industry is capitalizing on KEL-F products in dozens of applications from electronics and guided missiles to product packaging. Why don't you?

ACID PACKAGED IN FILM is a practical reality today. Drum liners of film made from KEL-F Brand polymer remain chemically inert even when they contain red fuming nitric acid. They prevent contamination, last indefinitely. (The protective gloves are made of KEL-F Brand elastomer, the valve and pipe of KEL-F Brand plastic.)

Chemicals opening new worlds of use for rubber

Irvington Chemical Division

Cashew nut oil, oat hulls, pine oil–from such unlikely substances are coming new performance for dozens of materials. Take rubber. Did you know that now it can be made to stay soft, still keep its strength, even in aromatic or ketone solvents? (C-1)* Or that it can be made hard without being made brittle? (C-2) Or that it can be made to resist ozone deterioration 24,000 times longer than ordinarily? (C-3) Irvington Chemical Division products perform these feats, and many more. And under Turpol, Fura-tone, Cardolite, Cardasol and Harvel Brand names these 3M chemicals are creating new horizons for your products–as friction particles and binders in brake linings (C-4), as tooling and vacuum forming resins (C-5), as impregnating and splining resins (C-6), as ingredients in phenolic and epoxy resins (C-7), in detergents and cosmetics (C-8), in chemically resistant mortars (C-9) and water-resistant corrugating pastes (C-10). Let 3M show you how!



RUBBER BECOMES SOFT, but stays tough, when non-leachable Turpol NC-1200 is added. Even after soaking in ketone solvent, Turpol softened rubber (center) stretches far more than unsoftened rubber (left), yet does not break like factice-softened rubber (right).

*For information about these 3M chemical products, check the appropriate numbers on the coupon on the following page.

Chemicals opening new worlds of use for tooling compound

Hastings Chemical Division

Hastings Chemical Division—A tooling compound (D-1) that can make cores and molds of any size is but one of the new products being created by Hastings Chemical Division.

Already in production with proved applications, or in advanced research stages, are . . . unusually high-strength plastic films for packaging, decorative and protective uses (D-2) . . . and new non-pigmented primer ingredients (D-3) that hold finishes to nearly any surface with flexible, chip-resistant bonds.

Inquire about these 3M chemical products! Let Hastings Chemical Division research help you!

LOW-COST TOOLS simply made, yet high in strength, abrasion- and heat-resistance, become possible with HC-111. This two-part 3M tooling compound allows you to make inexpensive vacuum-forming molds, core boxes or driers of almost any size.

Color and Acid Division

Progressive research, backed by years of industrial experience, has made this 3M division a quality supplier of sulfuric acid for steel pickling (E-1), of iron and chrome oxides for paint, plastic and floor tile (E-2) and of chrome oxide for metallurgical processes (E-3). Your inquiries concerning problems in these fields are invited.

Let 3M Chemicals open new worlds for you!

Take full advantage of 3M research. Let us send you free literature on 3M chemical products. Check the numbers of those you are interested in on the coupon below. Mail it today. And for consultation or more information write: Chemical Products Group, 3M, Dept. X2, St. Paul 6, Minnesota. Or contact the 3M Chemical Products Group in whichever of the following cities is nearest you: Atlanta, Ga.; Newton Center, Mass.; Bedford Park, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Detroit, Mich.; Los Angeles, Cal.; Ridgefield, N. J.; Philadelphia, Pa.; St. Louis, Mo.; San Francisco, Cal.

3M COMPANY CHEMICALS

CHEMICAL PRODUCTS GROUP • MINNESOTA MINING AND MANUFACTURING COMPANY

Fluorochemicals Division • Irvington Chemical Division • Jersey City Chemical Division
Hastings Chemical Division • Color and Acid Division

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Chemical Products Group,
3M Company, Dept. X2,
St. Paul 6, Minnesota

Sirs,

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Title_____

Company_____

Address_____

City_____ Zone_____ State_____

A-1 ☐	B-1 ☐	C-2 ☐	C-9 ☐	E-3 ☐
A-2 ☐	B-2 ☐	C-3 ☐	C-10 ☐	
A-3 ☐	B-3 ☐	C-4 ☐	D-1 ☐	
A-4 ☐	B-4 ☐	C-5 ☐	D-2 ☐	
A-5 ☐	B-5 ☐	C-6 ☐	D-3 ☐	
A-6 ☐	B-6 ☐	C-7 ☐	E-1 ☐	
A-7 ☐	C-1 ☐	C-8 ☐	E-2 ☐	

LEGAL

Kaiser Leaves it to the Court: Kaiser Aluminum & Chemical Corp. (Oakland, Calif.) has asked U.S. district court in Toledo, O., for help in settling several claims against the firm in Columbiana County, O. The claims result from liens filed by a number of construction firms employed as subcontractors.

Kaiser's petition to the court was accompanied by a $79,049 deposit with the request that it be apportioned among the creditors as the court sees fit.

According to the petition, Kaiser Aluminum contracted with Henry J. Kaiser Construction Co. to build a plant in Columbiana County. The construction firm subcontracted some of the work to other companies, which in turn let contracts to other firms. A dispute arose over payments, and the mechanics' liens were filed. Eight firms are involved.

•

Archer-Daniels-Midland Sued. In U.S. district court, Eugene Hirsch (New York) is asking judgment—for a total of $171,600—against Archer-Daniels-Midland Co. (Cleveland). He alleges breach of contract.

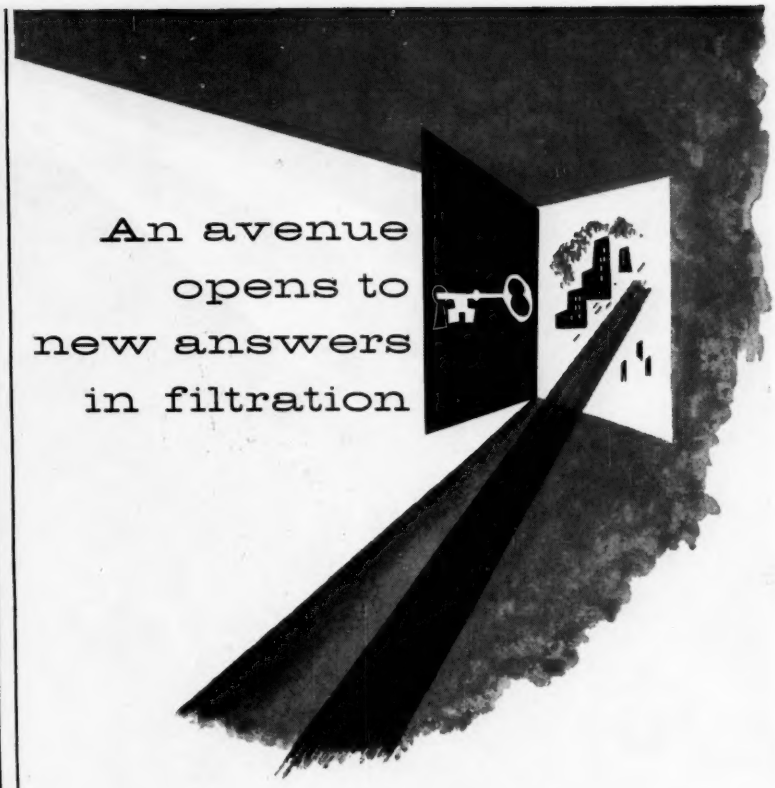
Hirsch says he discovered, and developed a calking composition used in making emulsion vehicles and paints. The complaint states that Hirsch delivered to the ADM's agents the process formulas for the composition. The company is accused of using the processes and know-how in violation of agreements between the parties, thus cheating and defrauding the plaintiff.

The complaint further charges that the defendant's product, Arolon 110, uses Hirsch's formula and invention, even though ADM earlier had told him it could not commercialize or use the process.

•

Metal-Protection Charges: Cathodic Protection Service has entered suit in U.S. district court (Houston, Tex.) against Corrosion Rectifying Co., asking $500,000 and alleging use of its trade secrets by Wayne A. Johnson, organizer of the defendant firm. Both companies are located in Houston.

In addition to damages, plaintiff is asking an injunction against alleged bribery attempts of Cathodic employees by Johnson.



Filtration studies never possible before except on a pilot plant scale are now made quickly, inexpensively and more accurately through a new development of Dicalite research.

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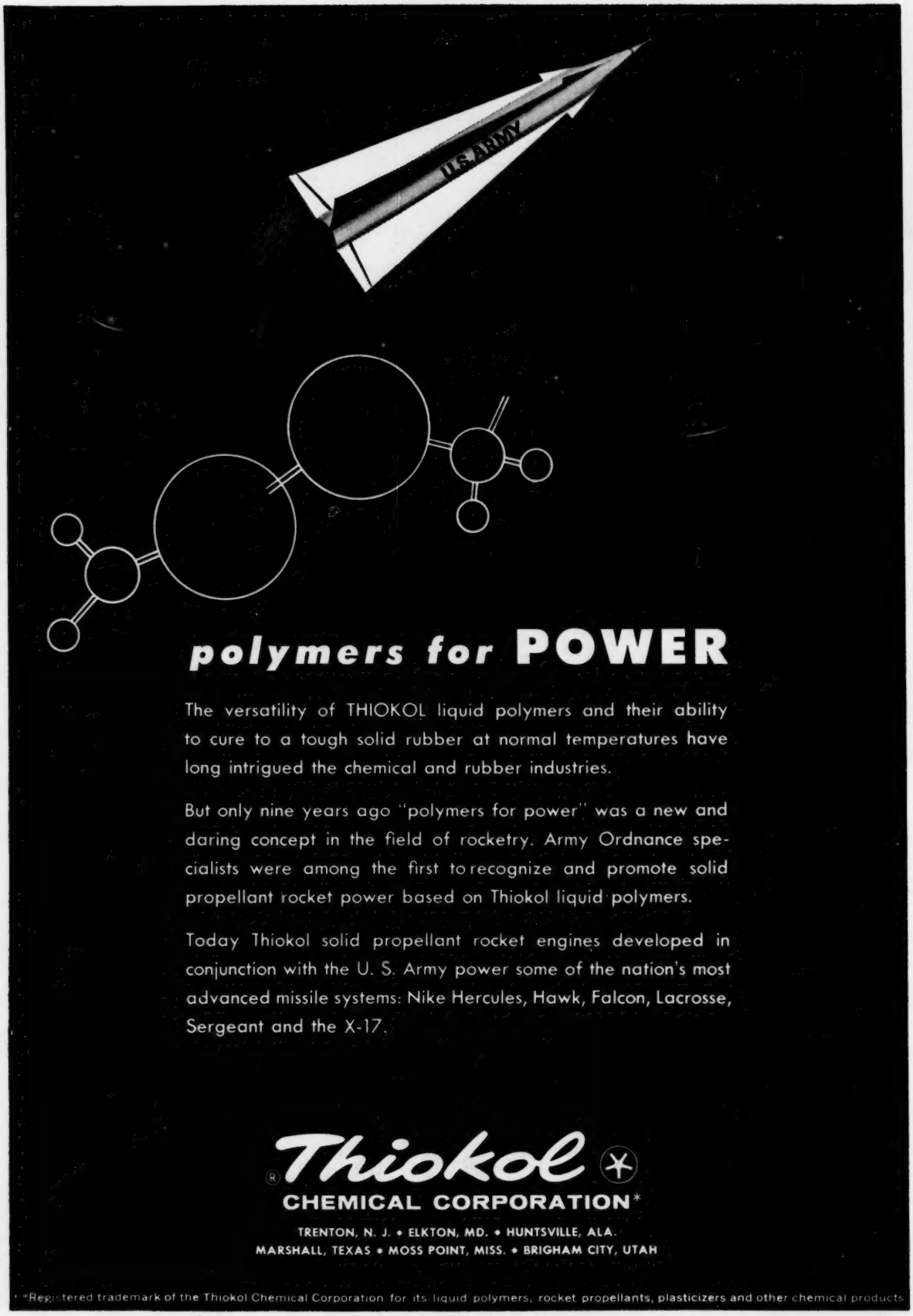

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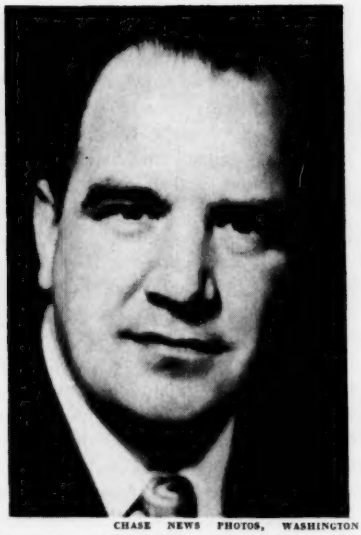
* *Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products



CHASE NEWS PHOTOS, WASHINGTON

Bargainer Childs: For three plants and 2,400 workers, a master contract.

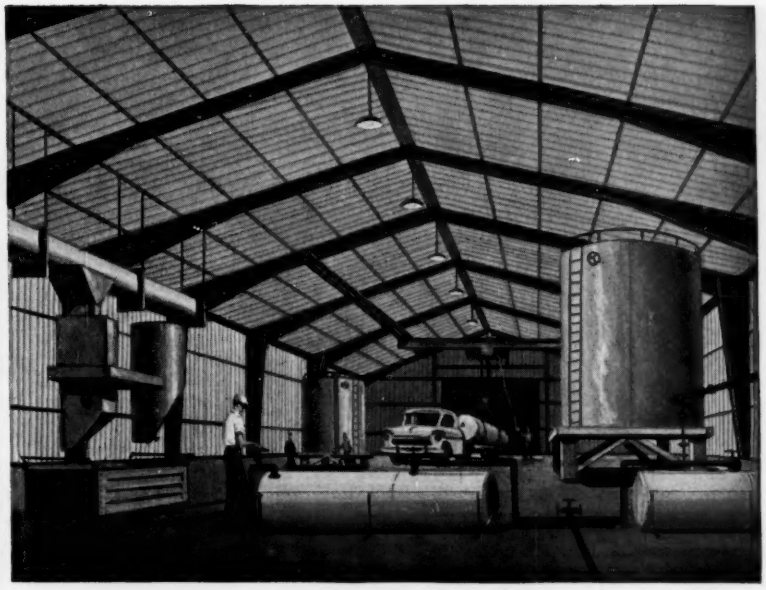
LABOR

Three-plant Pact: United Rubber Workers (AFL-CIO) has negotiated its first master contract with Congoleum-Nairn, Inc. The one-year pact—calling for an 8¢/hour across-the-board wage increase and insurance and other benefits worth an additional 2½¢/hour—was negotiated by a group of local and international union officials headed by Joseph Childs, URW's general vice-president. It covers approximately 2,400 workers in Congoleum-Nairn plants at Wilmington, Del., and Kearny and Trenton, N.J. Comments URW President L. S. Buckmaster: "We believe the company-wide agreement will stabilize and improve relations between Congoleum-Nairn and our unions." The union has been using company-wide bargaining for some time with rubber companies.

•

Two Strikes Ended: Process-industry strikes of 10-week and 15-week durations, respectively, were recently settled:

• Oil, Chemical & Atomic Workers (AFL-CIO) went back to work at five refineries and one petrochemical plant of Standard Oil of Ohio with a non-retroactive 6% wage increase. Last local to return was the one at the Sohio refinery in Latonia, Ky., where members wanted the company to reinstate two employees fired after a picket-line incident June 18. The com-



Chemical men get rugged clear-span design, attractive *Stran-Satin* walls with NEW STRAN-STEEL BUILDINGS

The open, clear-span design of Stran-Steel buildings makes them ideal for the large tanks, vats, and associated piping required for chemical processing operations. In addition, new Stran-Steel buildings have a look of quality never before achieved in an all-steel structure.

Start with the smart *Stran-Satin* finish. *Stran-Satin* metal wall, exclusive with Stran-Steel, provides a strong, durable exterior with the weather resistance of zinc-coated steel. Special protective coatings are available for extreme corrosive conditions. Peaks, gables and eaves are completely enclosed with smart fascia flashing.

Under this attractive exterior is a rugged steel structure. At the peak and knee, the continuously welded rigid frame I-section steel plate beams are securely bolted together. Each frame is also permanently bolted to the foundation.

New Stran-Steel buildings are quickly erected at minimum cost, provide clear, unobstructed space for large equipment, and may be provided with such required accessories as overhead craneways or large access doors. With Stran-Steel buildings, you get the cost-saving features of a pre-engineered structure in a quality building that is fire-safe and easy to insulate. They are available in widths of 32, 40, 50, 60, 70, and 80 feet, and multiples thereof.

Up to $25,000 is available to finance these buildings through the Stran-Steel Purchase Plan. As little as 25% initial investment; up to 5 years to pay. Ask your Stran-Steel dealer for the complete story. He is listed in your classified telephone directory. Dept. 24-25

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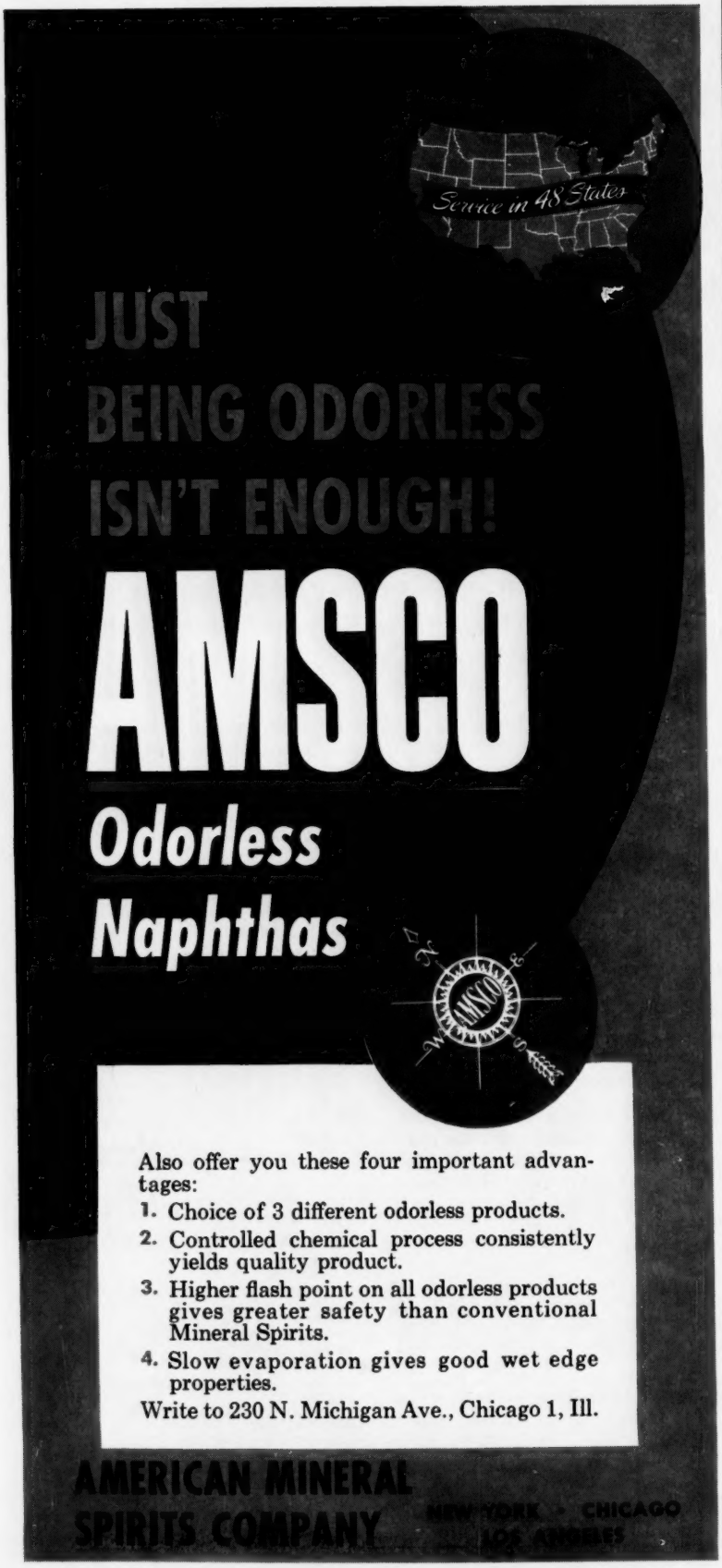
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ADMINISTRATION

pany later agreed to take back one of the two men after a 30-day suspension. The man whose discharge stuck —a 24-year employee who is currently a member of the Kentucky state legislature—made the back-to-work motion at the local union meeting.

• At American Cyanamid Co.'s laboratories in Stamford, Conn., the 160 employees represented by International Chemical Workers Union (AFL-CIO) returned to their jobs with a 10¢/hour package made up of wage increases ranging from 8¢ to 13¢ per hour. The 840 nonunion employees kept the plant in operation throughout the 108-day strike.

•

Items: Owens-Corning Fiberglas Corp. is offering to give its 10,000 employees and their 18,000 dependents free inoculations against Asiatic flu. . . . West German industry is expecting a new wave of wage demands right after this month's elections; employers think the unions have been silent during the campaign period so as not to arouse public sentiment against the union-favored party.

KEY CHANGES

Marion W. Smith, to board vice-chairman, Vick Chemical Co. (New York).

M. G. Woodward, to vice-president, Southern Nitrogen Co. (Savannah, Ga.).

Julius E. Spector, to vice-president, Sun Chemical Corp. (Long Island City, N. Y.).

John F. Thompson, Jr., to vice-president, Nuclear Corp. of America, (New York).

Arthur E. Gray, to general manager, Protective Coatings Division; and **Norman T. Shideler,** to president, Insul-Mastic, a subsidiary; Pittsburgh Coke & Chemical Co.

Paul Wenaas, to vice-president in charge of technical research; and **Charles Kindelberger,** to vice-president in charge of manufacturing; Simoniz Co. (Chicago).

DIED

Mrs. Margaret K. Cutter, 82, board chairman, Cutter Laboratories (Berkeley, Calif.).

Irving Zackler, 47, president, Stone Chemical Laboratories Co. (Chicago).

Dracco *Airstream* Conveyors

lead the way in modern bulk handling

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Today's Airstream Conveyors literally bring profits to your fingertips. Push-button controlled by one man, they move bulk materials swiftly and automatically through smooth-walled pipelines to any corner of the plant, or between plants. Diagrammatic arrangement of controls enables the operator to see at a glance all conveying paths in use and material levels in bins. Many operations can be performed: unloading, storing, reclaiming, blending, weighing, distributing and bulk loading.

These are not predictions of things to come, but are actual realities available from Dracco today. Companies planning automation of processes involving bulk materials should investigate handling the Dracco way. New Bulletin No. 530 gives full details. Write for your copy today.

DRACCO CORPORATION

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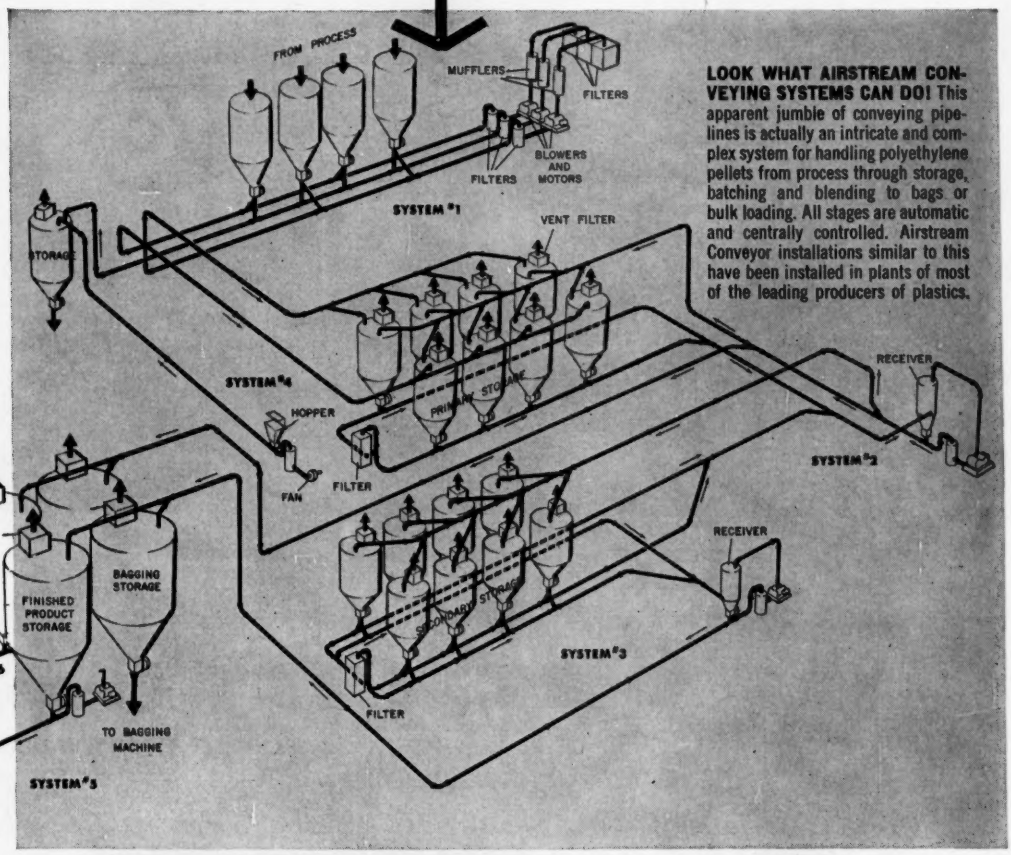

LOOK WHAT AIRSTREAM CONVEYING SYSTEMS CAN DO! This apparent jumble of conveying pipelines is actually an intricate and complex system for handling polyethylene pellets from process through storage, batching and blending to bags or bulk loading. All stages are automatic and centrally controlled. Airstream Conveyor installations similar to this have been installed in plants of most of the leading producers of plastics.

DRACCO *airstream* conveyors
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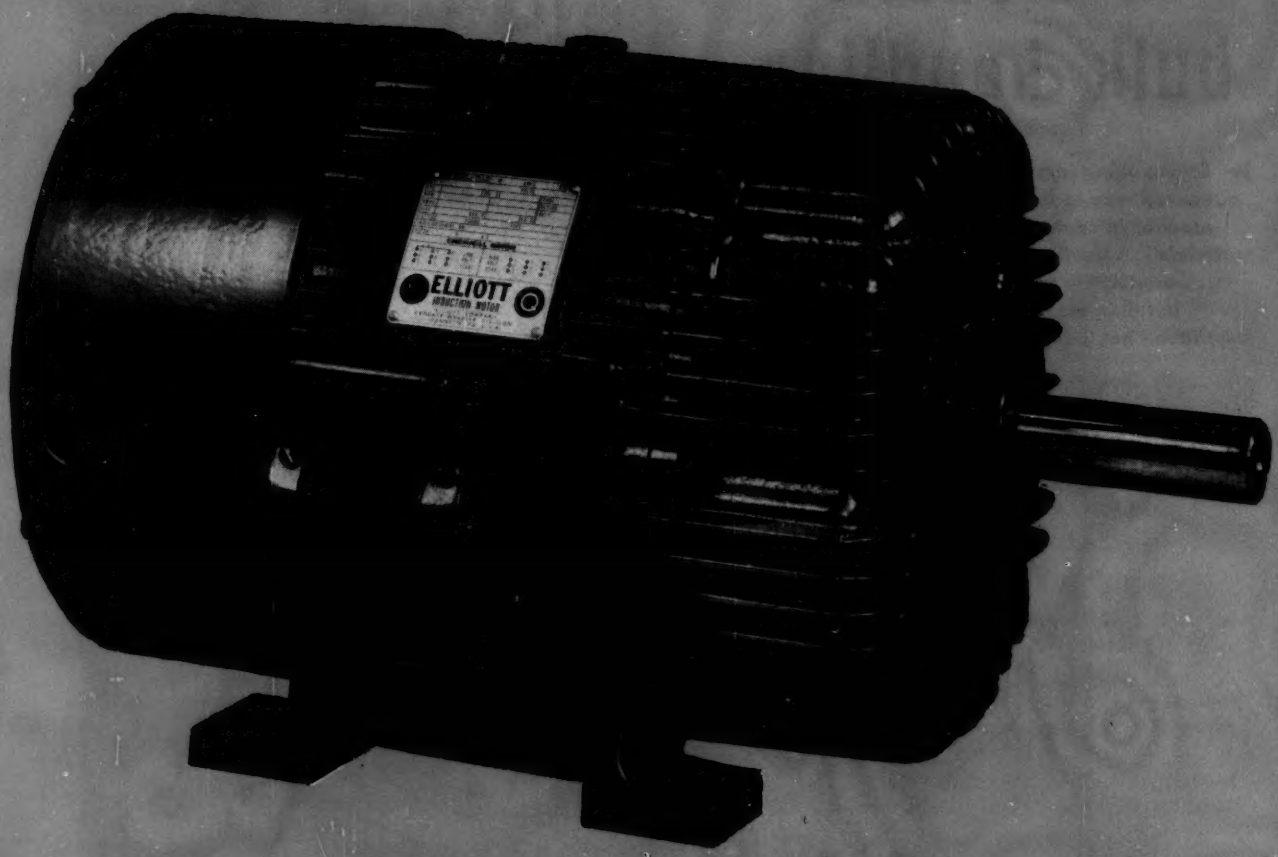

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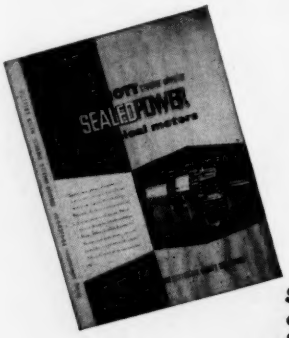

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Send for **new bulletin PB 6000-8, describing the remarkable Elliott Sealedpower C-W Chemical Motors.**

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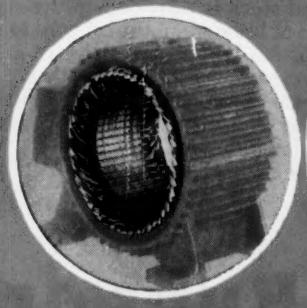
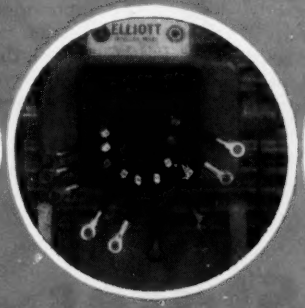
Thoroughly protected against corrosive vapors, gases and moisture, the new Elliott C-W totally-enclosed Chemical Motors are designed to serve dependably under conditions that would incapacitate other motors. Every vulnerable point has been sealed or armored. The entire frame, fan cowl and conduit box are of corrosion-resistant cast iron. The external fan is made of either cast bronze or cast aluminum (choice depending upon service conditions), with a split hub, keyed to the shaft. The windings are given special chemical-resisting treatment with siliconized varnish, providing a tough surface that resists acids, alkalies and moisture. A rotating slinger on the motor shaft effectively prevents the entrance of moisture and foreign matter. Leads are sealed by tightly-packed grommets. Nameplate is Monel and external hardware is heavily plated.

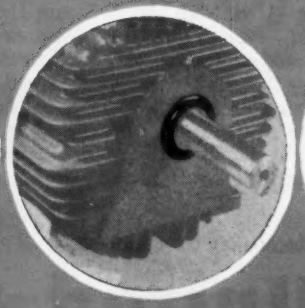
SOME OF THE PROTECTIVE FEATURES OF ELLIOTT CHEMICAL MOTORS



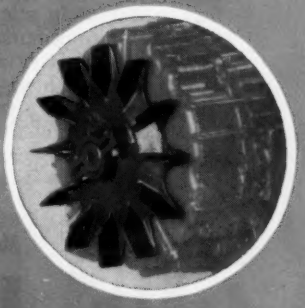
Windings have special chemical-resisting insulation.



When conduit box is mounted, grommet is tightly compressed, sealing the point where leads pass through the frame.



A rotating slinger guards the shaft opening against the entrance of moisture or foreign matter.



Cast bronze or aluminum external cooling fan is firmly attached to the shaft by both a key and bolted split hub. Safe against loosening and corrosion.

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Scalding steam is a powerful work-saving servant—but let it get out of hand and it can mean sudden death. Yet this valuable, though unruly demon is tamed by a hose that is *absolutely safe*—U. S. Matchless® Steam Hose. This hose cannot burst—even with steam pressures up to 200 pounds. After long, safe service—far longer than ordinary steam hose—the wall structure, instead of bursting, allows a trickle of steam to merely *leak* through—reducing the pressure and giving plenty of notice that a replacement is finally needed. Safety councils give U. S. Matchless their full approval.

U. S. Matchless Steam Hose is used in steam lines in every kind of industry. For such a husky hose, it is extremely flexible and easy to handle. The tube is made of specially compounded stock to provide high resistance to heat; the carcass is of braided mild steel wire to give outstanding strength, flexibility and ductility; a synthetic rubber cover resists heat, oil and weather.

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Technology
Newsletter

CHEMICAL WEEK
September 7, 1957

There's a new "world's purest silicon" producer this week— Merck & Co. Merck's silicon, like Westinghouse's similar offering (*CW, Aug. 24, p. 51*), contains less than one part impurities in six billion of silicon. But the similarity doesn't end there. Like Westinghouse, Merck has negotiated a license agreement with the West German firms, Siemens & Halske and Siemens-Schuckertwerke and will use their process and exchange technical know-how on a continuing basis.

To produce and sell its electronic-grade silicon, Merck has just set up an electronic chemicals division within its chemical division at Rahway, N.J., says the new division will concentrate initially on "producing and marketing the highest electronic grade of polycrystalline and single crystal silicon." Plans are to begin production early in 1958, although samples of the new silicon are expected to be available to the electronics industry in the near future.

•

What's in a name? Plenty, Du Pont thinks. So it has renamed its chemical department the central research department in order to better describe that organization. Unchanged are the department's functions—long-range fundamental studies in chemistry, microbiology and physics. The department's laboratories are located at Du Pont's experimental station, near Wilmington. All 11 Du Pont manufacturing departments and its engineering department also have laboratories at the station.

•

A new urethane synthetic rubber that's claimed to be capable of outwearing any known rubber will be produced by General Tire & Rubber Co. (Akron, O.). Moreover, General Tire says its new development, Genthane "S", is completely oil and ozone resistant and can be stored indefinitely without deteriorating. The firm's president, William O'Neil states that it expects Genthane "initially to make major inroads" into such major rubber-consuming industries as tire manufacturing—industries with an estimated 200-million-pound annual market. The field, he adds, could be broadened "considerably."

Among the elastomer's features: resistance to ultra-violet rays, "excellent" high temperature stability and low temperature flexibility, "superior" abrasion resistance and resilience. Unlike other urethanes, it can be processed on standard rubber machinery. Also, it reportedly is stable and non-scorching, "eliminates all handling problems", has "excellent" adhesion to synthetic fibers and metals, can be used with low-cost fillers such as carbon black, silica and clay. General Tire's chemical division will make Genthane at the company's Mogadore, Ohio, plant.

•

U.S. Borax last week revealed the breakoff of joint venture talks to establish a new company for research and production of boron chemi-

cals. In a letter to its stockholders, U.S. Borox announced that negotiations with "another firm" have been dropped "by mutual consent." Though Borax did not name Olin Mathieson as the prospective party of the second part, the joint undertaking would have been a logical one (*CW Technology Newsletter, June 22*). OM has never officially confirmed its interest in such a venture. A spokesman, once the Borax letter was made public, would say only that OM has negotiated with several borax producers in the normal course of procuring raw materials for its rapidly expanding boron chemical operations.

The recently completed expansion of U.S. Borax's research facilities at Anaheim, as well as its substantial increase in research personnel, was undoubtedly a major factor in the company's decision to go it alone.

•

A new process of reducing nitrobenzene to azobenzene—believed to be the first organic reduction using carbon monoxide as the reducing agent—has been developed in Germany.

The reduction of nitrobenzene by carbon monoxide is carried out at a pressure of 300 atmospheres, a temperature of 425 C in the presence of a gamma-aluminum oxide catalyst. Water must be excluded to prevent side reactions leading to the formation of such intermediates as benzoic nitrile, aniline, phenol, benzoic anilide and hydrocyanic acid. Reported yield: 43.5% azobenzene, mixed with nitrosobenzene. Estimated cost of azobenzene from a 40-tons/month plant is 51¢/kilo; present price of azobenzene in Germany is about $1.28/kilo.

•

Can nuclear energy be used for saline water conversion? That's what Fluor Corp. Ltd. (Los Angeles) will try to find out for the U.S. Department of Interior's saline water researchers. Fluor has received a $25,000 research contract from that agency; a group at its Whittier, Calif., research division will analyze the economics and technical feasibility of using nuclear energy—either as heat or as an electrical power source—for saline water distillation.

•

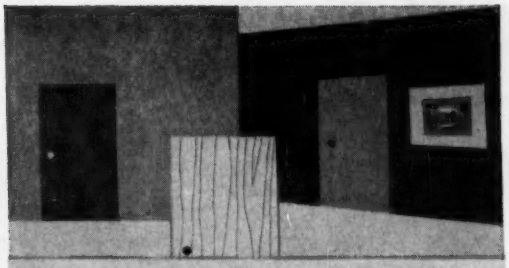
Rice-extract "vaccine" for combatting plant virus infections came to light last week at a meeting of the American Institute of Biological Sciences at Stanford University. Scientists from the Army Chemical Corps Biological Warfare laboratories reported that juice from several parts of the rice plant effectively inhibited the growth of tobacco mosaic virus in pinto bean plants.

•

Gas chromatography has come to the aid of aerosol producers as the first direct method for quality control of propellants. Morris Root, technical director of G. Barr & Co. (Chicago), described the technique at last week's International Symposium on Gas Chromatography.

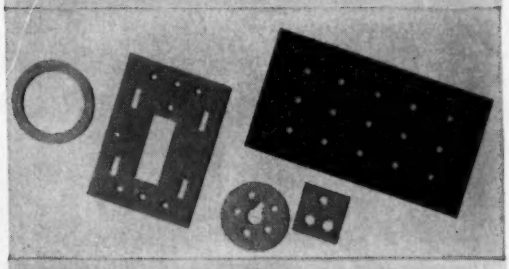
these four applications are improved with

DAPON® resin



DECORATIVE LAMINATES made with DAPON resin do not require the usual "facing" steps. The printed paper can be laminated directly to the backing material in a single operation. For applications requiring soft backing materials excellent flows can be effected at pressures as low as 50 psi. With either high or low pressures, laminates of DAPON resin exhibit exceptional resistance to abrasion, chemicals and heat.

APPLIANCE HANDLES to match any color decor of the modern kitchen are now possible. The exceptional heat stability of DAPON resin molding compounds (producible in a wide range of colors) permits the finished article to withstand high temperature exposure for prolonged periods of time with substantially no loss or change in color. Moldability of DAPON resin compounds is excellent. Added advantages of good impact strength, high detergent resistance, unmatched resistance to food and beverage staining make DAPON the number one resin for appliance handles.



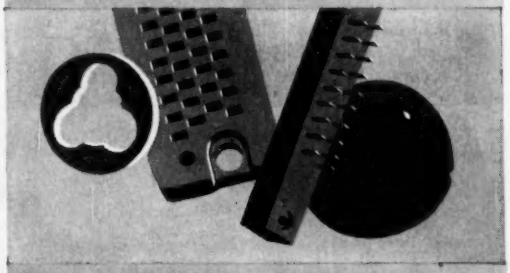
INDUSTRIAL LAMINATES made with DAPON resin have a number of outstanding properties: Superior electrical properties e.g., high insulation resistance retained under conditions of high humidity; heat resistance without degradation even under sustained vibrational stress. Other advantages exist in end uses requiring a high degree of chemical and moisture resistance, good dimensional stability, mechanical strength and ease of machinability. Formulated with or without volatile solvents DAPON resin is suitable for use in the full range of pressure curing conditions.

DAPON resin is a solid prepolymer of diallyl phthalate; making available the outstanding properties of this material in a form readily usable in all types of thermosetting resin operations.

In selected applications these properties are unmatched by existing resins. DAPON resin should be evaluated for use as the base resin in any thermosetting application requiring chemical resistance, heat and humidity resistance, superior electrical properties, good moldability, or dimensional stability.

Extensive testing programs have been completed to point up those uses and applications in which DAPON resin has distinct merit and produces decidedly better properties. Molding compounds with various fillers, reinforcing fibers and colors are now available. Government approval under a number of military specifications has been obtained.

Let us know the application you have in mind for DAPON resin . . . write now for literature and technical data.



MOLDED ELECTRICAL PARTS containing DAPON resin exhibit highest resistance to humidity changes. Maximum retention and rapid recovery of electrical properties are insured by the unmatched stability of DAPON resin and the absence of deleterious products of degradation under long term use conditions. Properties of dielectric strength, dielectric loss, volume resistivity and arc resistance are particularly outstanding. Very low molding and post molding shrinkage allow close tolerances and the use of closely spaced inserts. Moldability and resistance to heat and chemicals are excellent.

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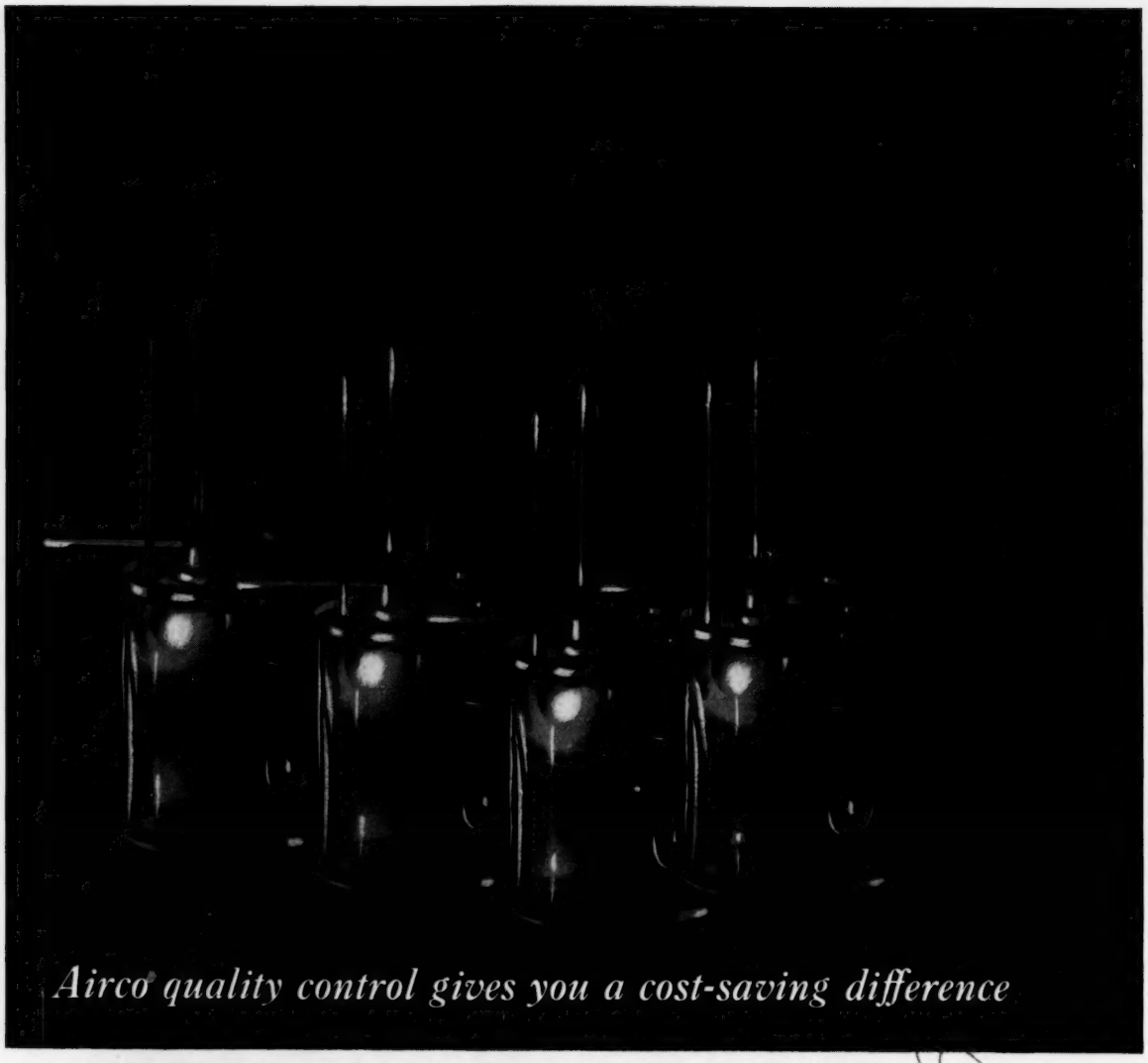

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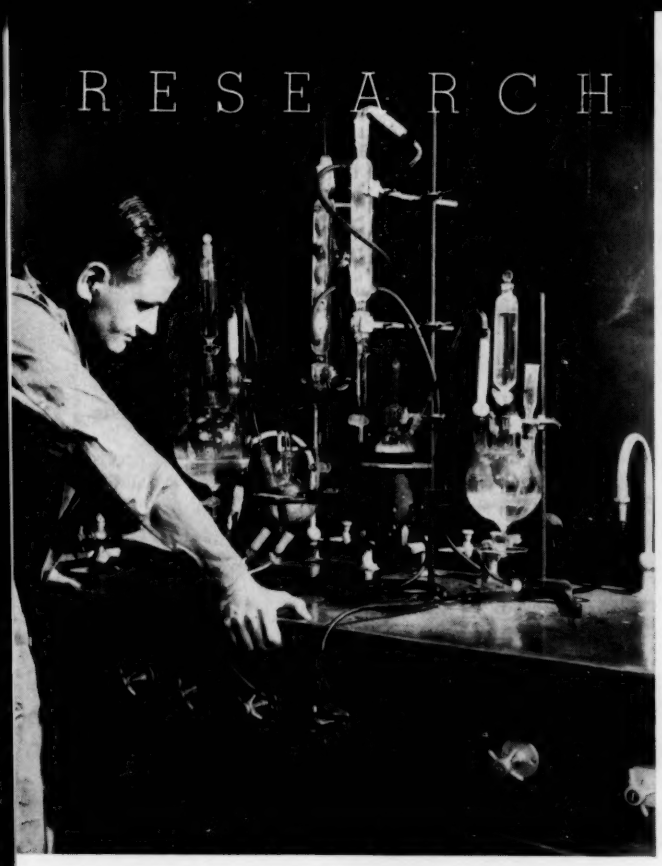


Winthrop Laboratories' Surry is the man behind the promise of new relief to arthritics. His drug is . . .

The New Bright Hope for Arthritis Sufferers

Historically, drugs employed in the treatment of rheumatoid arthritis have been palliatives rather than cures. These include such diverse compounds as modified hormones (e.g., prednisone, prednisalone), salicylates, natural hormones, phenyl butazone, gold compounds, etc. (CW, March 19, '55, p. 70). But this week, Winthrop Laboratories (New York) is betting heavily that it has found the exception to the rule.

Winthrop is launching a "crash" manufacturing program to build up supplies of its chloroquine, tradenamed Aralen, on the basis of six years of clinical studies by 14 investigators. Results reportedly show the drug not only suppresses arthritis symptoms but also attacks the disease itself (*CW Technology Newsletter, Aug.* 31). Moreover, the first long-term (four years) study of Aralen's continuous daily use shows it to be free of the taint of cumulative toxicity.

This study is the work of physician Arthur Bagnall of Vancouver, British Columbia, former president of the Canadian Rheumatism Association. Bagnall gave daily doses (250 mg. each) of Aralen to 125 arthritic patients over the four year period, reported* good results in 71% of them. Half of his test patients still enjoy remission of the disease. None of the currently used arthritis drugs have given such results.

Bagnall himself has no idea why Aralen works the way it does. He says its action is like "slow neutralization of the disease-producing mechanism itself." He thinks the drug's action warrants further study, may yield an understanding of all diseases of the connective tissues—including arthritis.

"Not the Final Answer": But Bagnall isn't yet ready to believe that Aralen is a cure for arthritis; he considers it to be an agent to control the disease, says it can be used in conjunction with steroids (e.g., cortisone). "Aralen," according to Bagnall, "is not the final answer, but a major step forward" in the treatment of arthritis.

Winthrop, a division of Sterling Drug, thinks that Bagnall's work may open up an $80-million market for Aralen—a market that goes on the block when the firm's basic patent on chloroquine runs out next summer.

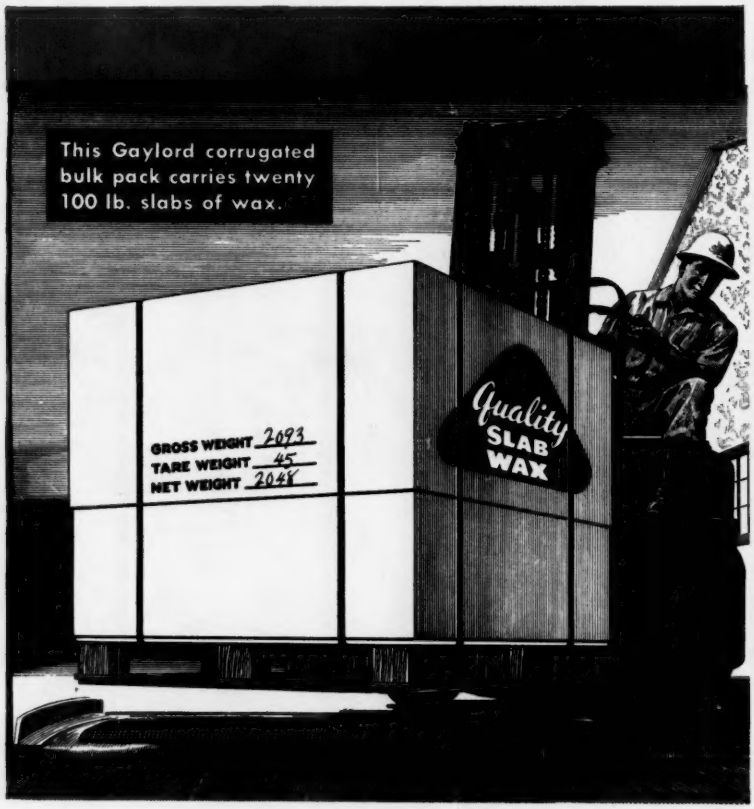
The firm plans to produce and market 150 million tablets (250 mg.) in the next six months for the nation's 4½ million arthritics. Its supply of the drug is already sizeable.

Changing Role: Chloroquinone was originally developed—by Alexander Surry of Sterling-Winthrop Research Institute (Rensselaer, N.Y.)—during World War II as an antimalarial replacement for atabrine. The latter's drawbacks include such toxic side effects as skin discoloration.

While Winthrop is the only U.S. chloroquine manufacturer (and patent holder), Baker and May Ltd. produces the drug in England and an ex-G.I. Farben subsidiary also manufacturers it in Germany.

Chemically, chloroquine is 7-chloro-

*Canadian Medical Journal (Vol. 77, p. 182, Aug. 1, '57).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GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

With the expiration next year of the basic patent on chloroquine, several firms are taking a broad look at the methods for the material's manufacture. Here's how Winthrop Laboratories does it.

Winthrop begins with 7-chloro-4-hydroxy-2-carboxyl quinoline, which it obtains from Hilton-Davis, also a Sterling Drug subsidiary. Winthrop decarboxylates it, reacts the product with phosphorous oxychloride to form 4, 7-dichloroquinoline.

This, in turn, is reacted, in the presence of phenol, with 1-diethylamino-4-amino pentane (also supplied by Hilton-Davis) to yield 7-chloro-4-(4′ diethylamino - 1′ - methylbutylamino) quinoline.

The diphosphate salt of this material (made by reacting it with phosphoric acid) is chloroquine.

4 - (4′ - diethylamino - 1′-methylbutylamino) quinoline diphosphate and is made from 7-chloro-4-hydroxy-2-carboxyl quinoline (*see box, above*).

First evidence of the drug's possible value against arthritis was turned up by malaria specialist Alf Alving of Chicago in studies of malaria drugs on prisoners at the Illinois State Penitentiary (Stateville, Ill.). About the same time in 1951, English physician F. Page reported similar findings. Together, these clinical "accidents" sparked ensuing research on the anti-arthritic properties of chloroquine. Efficacy of the compound has since been attested to by rheumatologists in this country and abroad.

Chloroquinone in its new role is in for a lot of hard appraisal by drug firms (e.g., Schering and Merck) who have a strong position in anti-arthritic drugs. Chances are chloroquine will join, rather than replace, the established drugs. That's because not all arthritics respond to the drug or tolerate it well. And full evaluation of its chemotherapeutic potential may take years.

But its low cost—about 10¢/250 mgm. dose v. 50¢ per the usual dose of cortisone—and healing potential are likely to help chloroquine become a new prescription favorite.

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RESEARCH EXPANSION

• General Foods (White Plains, N.Y.) is moving into its new research center at Tarrytown, N.Y. The new labs, costing an estimated $10 million include product and process research and development facilities for both basic research and service for twelve GF divisions. Nearly 500 technical personnel making the move are vacating the firm's older Central Lab building in Hoboken, N.J., it will be used to expand research facilities in the Maxwell House Coffee Division.

• Hazelton Laboratories (Falls Church, Va.) this week opened its Western Division in Palo Alto Cal. The new lab will specialize in pesticide residue research, food additives and packaging materials.

• Nuclear Chemical Company (Chicago), a new company, will offer consultation services on special syntheses and research involving application of radiochemicals. Organic compounds tagged with radioactive carbon, hydrogen, phosphorous and sulfur will also be available.

• C & D Batteries Inc. (Conshohocken, Pa.) has created a new division to undertake basic research on storage batteries.

• Electro Metallurgical Company, a division of Union Carbide Corp., is doubling the space available for chemical-metallurgy research at its process research center, Niagara Falls, N.Y.

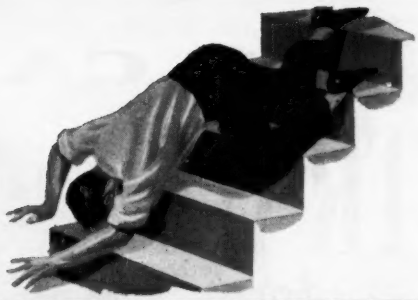
• California Spray-Chemical Corp. has opened a quality-control laboratory at its recently completed $16 million fertilizer plant in Richmond, Calif.

• Schwarz Laboratories (Mount Vernon, N.Y.) has acquired a new building, will enlarge its brewing research and analytical laboratories at its present property.

• Walter Kidde Constructors, Inc., (New York and Houston) has been awarded a contract by the Atomic Energy Commission for architectural design and engineering of supporting office and laboratory facilities for Princeton University's thermonuclear Model C Stellarator research project. The Stellarator will be used for research into controlled thermonuclear reactions at the University's Forrestal Research Center near Princeton, N.J.

• Construction of a large addition to the process-research building is underway at the metals research lab-

Eliminate slipping accidents!



Relgrit® Abrasive Embedded Grating Treads

Industrial plants throughout the country have found that Relgrit has practically eliminated slipping accidents wherever used.

Relgrit treads are made with an aluminum oxide abrasive, embedded in a "V" groove at the top of the grating bars and nosing. This forms a skid-proof surface that is virtually immune to wear; providing *permanent* protection from slippery surfaces due to water, mud, oil, grease, acids and chemicals. Relgrit is also made for platforms and all other grating areas.

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Relgrit Abrasive Gratings and Treads • Lightweight Bridge Flooring
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Designed for specified process requirements
easy, low-cost maintenance
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As a recognized leader in distillation engineering and equipment, Vulcan insures *correct* handling of maintenance and replacement needs in fractionating operations.

TRAYS . . . bubble cap or sieve . . . designed and built for installation in shop or field . . . close tolerances on alignment, tray levelness and flatness . . . one piece, sectional or Shell Turbogrid . . . economical, special designs based on required vapor and liquid flows . . . quality fabrication.

BUBBLE CAPS AND RISERS . . . Vulcan's 3 or 4-inch, pressed or cast "regulars" . . . specially designed caps for particular process requirements . . . close attention to pressure drop, depth of seal on tray, tray thickness, metal used, corrosion conditions, need for frequent cleaning and other factors.

Write for bulletin "Distillation Engineering and Equipment."

If interested in distillation pilot plant ask for bulletin on Model A-2 Unit.

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RESEARCH

oratories of Electro Metallurgical Co., division of Union Carbide Corp. The new extension, at Electromet's research and development center in Niagara Falls, N.Y., is scheduled for completion in November.

PRODUCTS

Vitamin Entry: Production of flavin-adenine dinucleotide (FAD), a more active form of vitamin B_2, has started at the Wakamoto Pharmaceutical Co., Ltd. (Tokyo). FAD is sold in the U.S. for research and investigational use only. Fallek Products Co., Inc. (New York) is the exclusive U.S. distributor for the bulk product in powder form.

•

Hard Glass: A new hard glass, known as KG-33 borosilicate glass, has been developed by Kimble Glass Co., a subsidiary of Owens-Illinois Glass Co. (Toledo, Ohio). It's said to match or excel the performance of competitive glasses, will be used in laboratory and scientific glassware.

•

Intermediate: Dichloroethyl formal is now available from Thiokol Chemical Corp. (Trenton, N.J.). It's used in synthetic rubber, dyestuffs, etc. as a chemical intermediate, is also a high boiling (218 C) solvent.

•

Price Drop: Increased production of arginine and its derivatives at Mann Research Laboratories, Inc. (New York) has resulted in an arginine price drop from several hundred dollars per kilo to $85.00/kilo. Arginine base, arginine monochloride, and arginine glutamate are reportedly gaining clinical interest in the treatment of hepatic coma.

APPARATUS

Space Saver: A new line of hermetically sealed acrylic plastic enclosures designed to replace special atmosphere (e.g., dust-free) rooms is offered by Controlled Atmosphere Enclosures Corp. (Springfield Gardens, N. Y.). They're for use in such applications as pharmaceutical compounding, enclosure of delicate recording instruments, etc., feature high transparency.

•

Streamlined Fume Hood: Spherical corners distinguish Warren Corp.'s (Pittsburgh) new fume hood, intended for use with radioactive or perchloric materials.

COPPER

COPPER SULFATE
Industrial Crystals and all common grades.

MONOHYDRATED COPPER SULFATE
35% Copper as metallic packaged in steel drums at no extra cost.

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55% Copper as metallic. Light and dense grades.

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37% Copper as metallic. Available in polethylene-lined drums or bags.

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Minimum 76% Copper as metallic. Technical grade . . . NOT A BY-PRODUCT.

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LIQUID SULFUR DIOXIDE
Highest commercial quality, available in tank cars, tank wagons, ton cylinders and 150-lb. cylinders.

CHLOROSULFONIC ACID
Iron less than 1.0 ppm as loaded. Water white. Delivered in glass-lined tank wagons, also in stainless steel drums.

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T-C HYDRO is a dry, white, free flowing, crystalline powder of uniform particle size and structure. It is dust free, assuring highest stability and uniformity.

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36% Zinc as metallic. White, free flowing powder.

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Secondary Zinc Oxide.

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65% Mn SO_4. Designed specifically for inclusion in mixed fertilizer.

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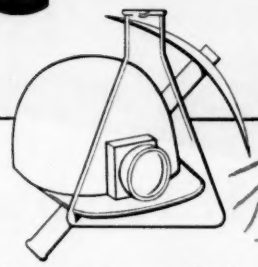
MANGANOUS OXIDE
Minimum 48% Manganese as metallic. Feeds, fertilizers, spray or dust grades.



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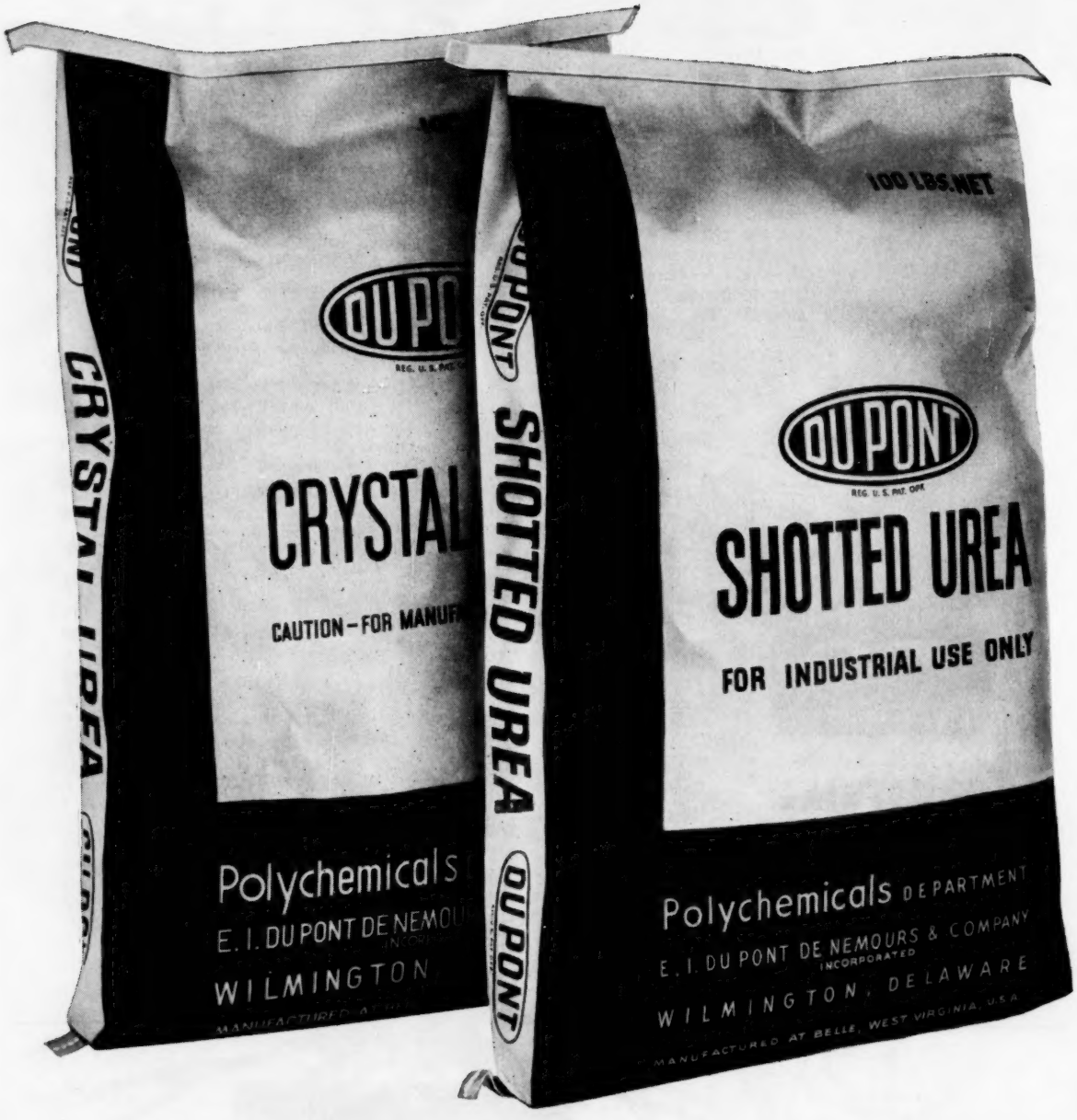

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A product of continued research and development —Du Pont Urea is conveniently supplied through a nationwide network of distributors.

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FORMULA: $CO(NH_2)_2$

Typical Analysis for Crystal Urea:

pH (10% solution at 20° C.)	8.3
Moisture	0.25%
Ash	11 ppm
Free Ammonia	4 ppm
Iron	0.4 ppm
Color, APHA (10 gm. in 100 ml. methanol)	2
Turbidity, APHA (50 gm. in 100 ml. water at 25° C.)	5 ppm

Typical Analysis for "Shotted" Urea:

pH (10% solution at 20° C.)	9.4
Moisture	0.17%
Ash	35 ppm
Free Ammonia	150 ppm
Iron	0.9 ppm
Color, APHA (10 gm. in 100 ml. methanol)	2
Turbidity, APHA (50 gm. in 100 ml. water at 40° C.)	7 ppm

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Minneapolis — Merchants Chemical Co., Inc.

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Kansas City — Barada & Page, Inc.
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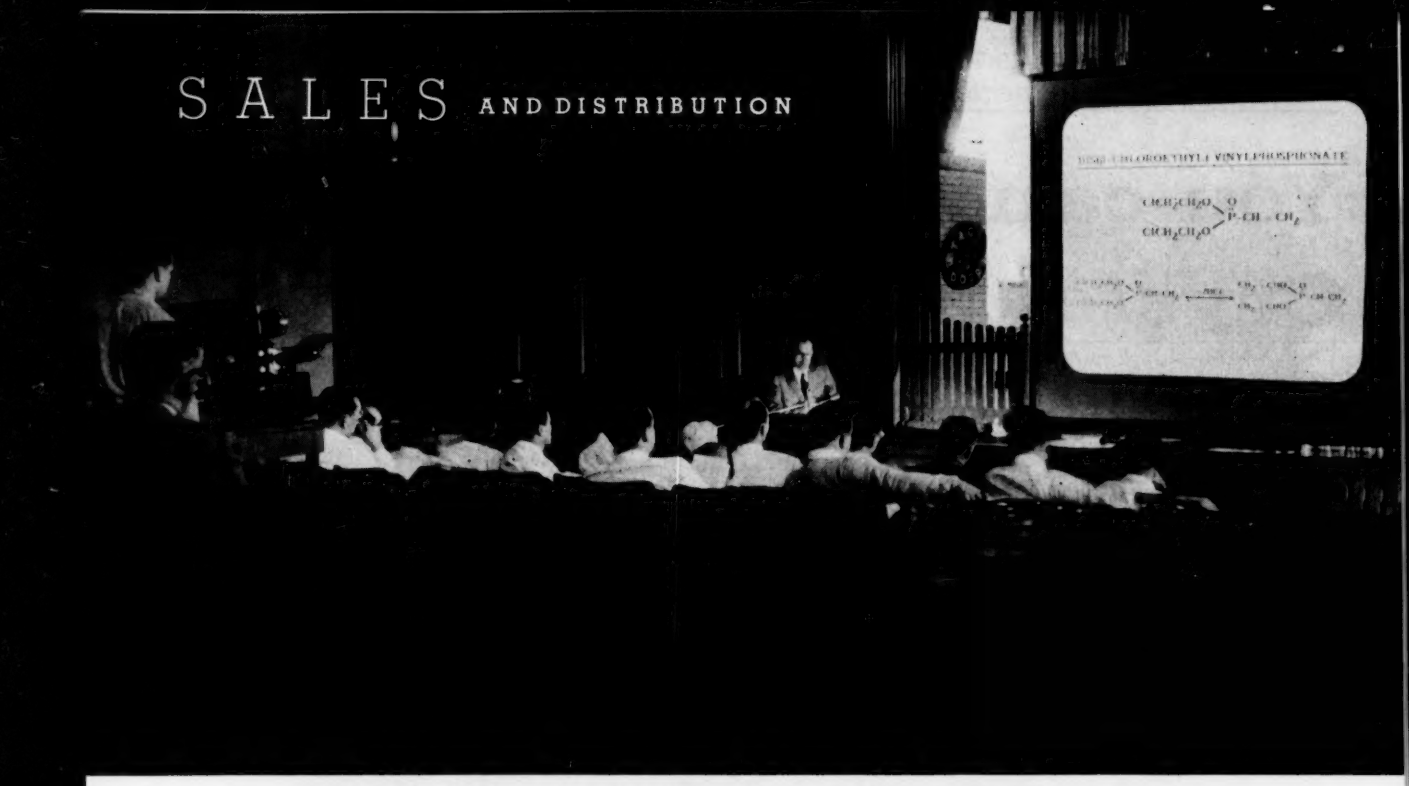

Monsanto Organic Division salesmen concentrate on briefing session, part of . . .

Masterminding New Intermediate Markets

Burdened with display materials and briefcases bulging with literature, four Monsanto Organic Division staffers will take to the road this fall to wrap up the first phase of a commercial chemical development project aimed at mass-producing applications for new intermediate chemicals. Some 25 research laboratory staffs will get one- to two-minute capsulized descriptions of the chemistry of more than 60 different chemicals.

This approach, in Monsanto's first try with it, has resulted in:

- More than 300 lectures to a cumulative audience of 4,000 technical men.
- Request for over 2,000 samples.
- Applications of such volume and quality that 12 exploratory chemicals now have at least a 50% chance of becoming commercial items within two years.
- Scores of other ideas for chemical end uses that stand less chance of success or will take longer times to develop.
- Ideas for two new chemical application fields. Labs have been built for one, approved for the second.

If any one of the applications proves successful, says Organic Division Assistant Development Director Ned Klein, "The entire program will more than justify itself."

Many chemical firms send speakers out to contact chemists. But Monsanto's approach differs from most others in several aspects:

- Lectures are presented by development department project specialists, not by salesmen.
- Content stresses chemical reactivity of new molecules rather than sales pitch factors—quality, service, etc.
- Price estimate is given on the basis of commercial production volumes.

How does the development program work? Basically, explains Klein, it's set up this way: three project supervisors and the section manager handle the presentation shows for chemical researchers. Formal objective: stimulating the maximum number of researchers at minimum cost. That's because only a very small percentage of potential applications ever reach fruition and the more end-use studies launched, the better the chances of markets developing for a new exploratory chemical. "It's impossible," says Klein, "for one manufacturer alone to find more than a few of the applications for a new product." In addition, the plan enables Monsanto to capitalize on its "research inventory" by close technical liaison with the end-use experimentor.

Each of the four men has a geographical and product area. Thus one supervisor, for instance, concentrates on the West Coast, specializes in organophosphorus and organosulfur compounds. The product specialization is closely geared to the interests of laboratories in the area.

Getting Ready: Naturally, comprehensive advance preparation precedes the show. Chemicals chosen for the exploratory intermediate program must have "sound economics," must match Monsanto's raw material position and technological capacities. And the molecule must have reactive functional groups to permit combination with a broad range of other chemicals.

Elaborate cost and selling price estimates, technical data sheets, patent reviews and on occasion, big wall charts showing all the major chemical reactions of a compound, are worked out beforehand. Well organized conferences between research, process and development people—with a dash of

Solving Product Problems with Willy Waxheart—

. . . Maybe the pack lacks wax, Max!

Manufacturer: Well, I've tried everything short of atomic radiation to make these packages work. What's the pitch on wax?

W. W.: Wax works wonders these days -- thanks to new formulations, new research data. From coatings to cartons, from foods to finishes, you can package it for less with wax.

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W. W.: See the boys at Warwick, the world's largest producer of specialty waxes. They'll be glad to work with you elbow to elbow to find a formulation to meet your problem. And here's a motto to pass along to the boys in the lab:

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brainstorming—help generate ideas for new application areas and compounds.

With such data and ideas, the development team sets out to encourage customer-applied research on the intermediates. The sales department usually lines up the laboratory shows. Research directors are encouraged to have the "bench chemists" attend the show. A check of the correspondence and sales files and a chat with the director help the staffers tailor the presentation to the audience.

As slides of the chemical reactions are flashed on the screen (with smaller groups flip charts are used), the speaker, in rapid-fire fashion, describes briefly one reaction after another. The projected selling price for commercial production is mentioned. Usually, only a minute or two is alloted for each chemical.

Before or after a presentation, a loose-leaf notebook containing data sheets for each chemical is distributed to attenders. It, too, offers an estimate of the projected selling price. And there's the inevitable, often lengthy question-and-answer period — often leading to a request for a sample.

Throughout, the speakers steer wide from the faintest trace of hucksterism. Such an approach, believes Klein, would chill audience responsiveness quickly. Researchers react best to an academic, factual, scholarly approach.

As a rule, Monsanto's traveling development staff finds it's best to keep both the verbal and visual presentation technical, the audience to moderate size and encourage informality. That enhances retentiveness and encourages questions. And it's usually desirable to pass out the looseleaf before the show (for scribbling notes), have a second man along to act as an "interruptor." He varies the pace by raising questions, encouraging audience participation. More questions are raised when the question time follows a given subject area than when it comes at the end of the show.

Things to steer clear of, Monsanto has found, are discussion of chemicals commercially available in large quantities, overt sales pitches, over dramatization, processing techniques and change of speakers during a presentation. The latter tends to "wear out" an audience. And the single speaker can sense audience saturation better.

Follow up: Advertising, direct mail, letters, personal visits and samples comprise the follow-up phase. Several months after a sample is shipped, the customer receives a personal (nonstandardized) letter and a one-page questionnaire. Questionnaire data is graded and recorded in a card filing system.

The cards, organized by product name, indicate sample origin, quantity sent, what motivated the sample request, sample inventory remaining, the number of research manhours the customer has spent on the sample, potential volume of use and miscellaneous remarks.

For each exploratory chemical, Monsanto periodically makes a "guesstimate" of its percent chance of reaching commercialization in two years, records it on a graph. The judgement, admits Klein, is largely a guess but is related to Monsanto's and the customer's work with the item. A favorable change in process economics ups the rating considerably, a flaw discovered in the end drops it. If a customer is "enthusiastically" following the compound, it gets a 50% chance, or higher rating.

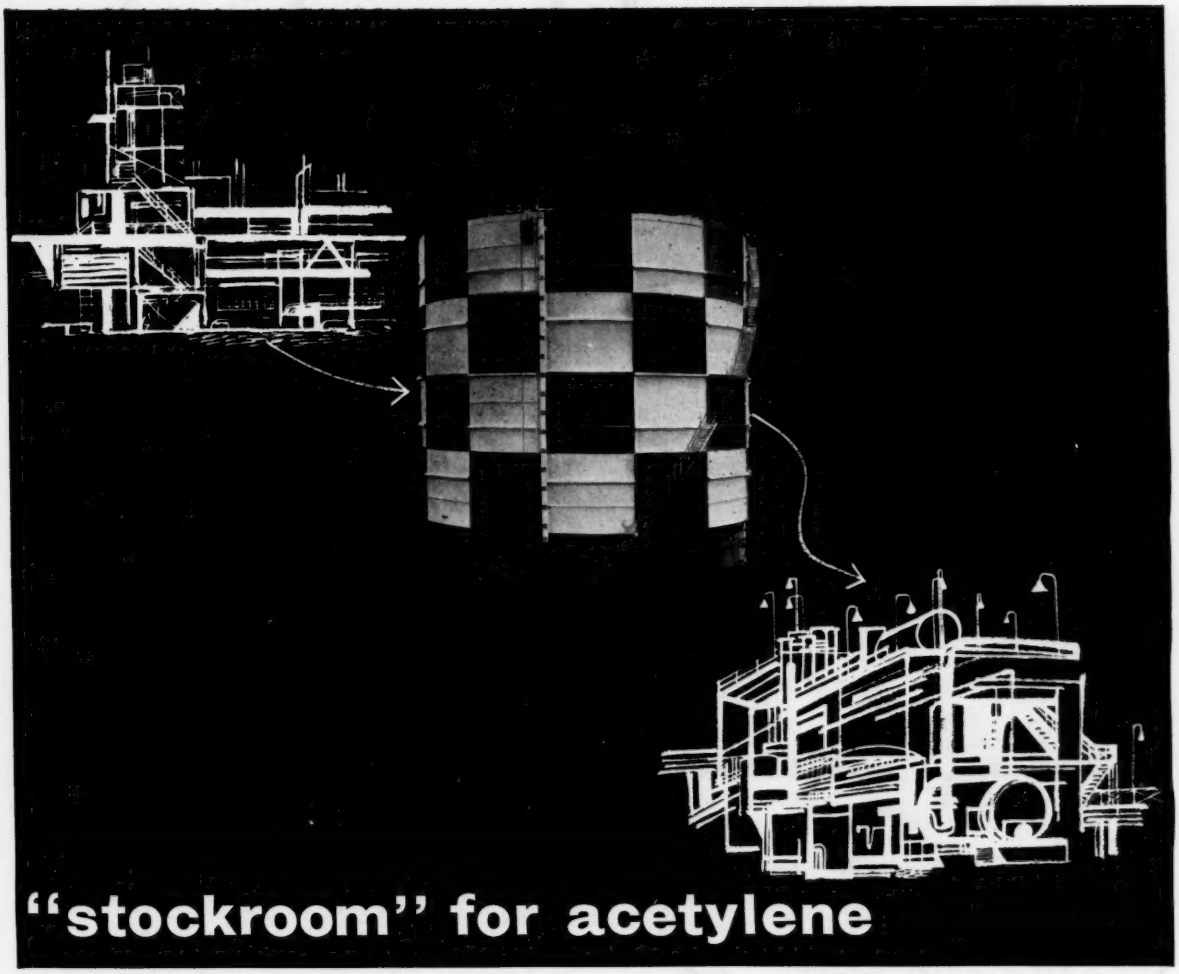
Worth the Work: Group chats with researchers, holds Klein, offer a number of advantages to both the company and customer. The method reaches the maximum number of researchers at a minimum cost. Vivid stimulation of end-use research helps the supplier get the jump on competitors and, of course, get maximum return from his investment in technical talent. The customer cashes in on new ideas, being the first to improve a product or process with new materials.

Would Monsanto use the method again? "Well," said Klein, "not right now. We are in our second phase—following up the leads developed by the shows. But after that—in about a year—we'll start a second round for at least one and maybe two new product areas."

Coming This Month

PETROCHEMICALS

What's happening, what's ahead in this fast-growing segment of the chemical process industries.



Linde purchases Wiggins Gasholder for storage of acetylene between production and use cycles

When Linde Air Products Company's new acetylene plant in Montague, Michigan goes "on stream", a new 100,000-cubic-foot Wiggins Gasholder will play a vital role in the operation. Every cubic foot of acetylene produced will pass through the "stock-room" on its way to DuPont for use in the production of Neoprene. The gasholder will provide acetylene storage and will serve as surge capacity to enable Linde to satisfy both normal and emergency requirements.

If you produce, store or use gases, investigate the advantages of Wiggins Gasholders. They can be built to any capacity—from 50-cubic-feet to a million. Call or write General American for complete information.

WIGGINS VAPOR SEALS GENERAL AMERICAN TRADE MARK

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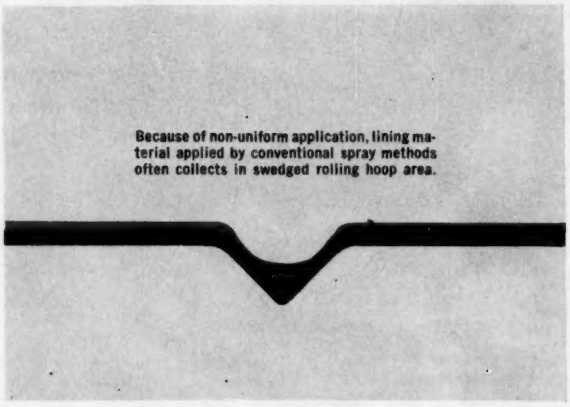
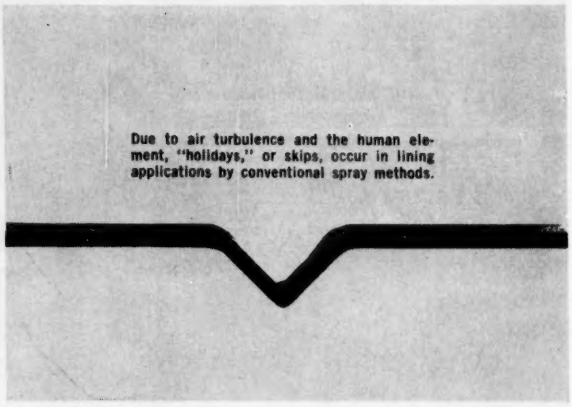
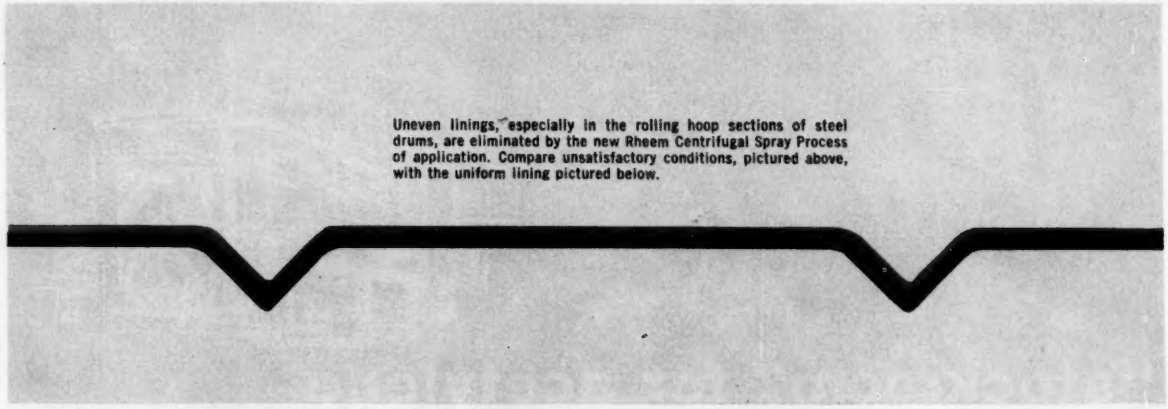
No more globs or skips!



Because of non-uniform application, lining material applied by conventional spray methods often collects in swedged rolling hoop area.

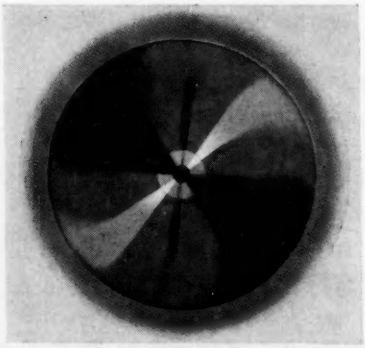


Due to air turbulence and the human element, "holidays," or skips, occur in lining applications by conventional spray methods.



Uneven linings, especially in the rolling hoop sections of steel drums, are eliminated by the new Rheem Centrifugal Spray Process of application. Compare unsatisfactory conditions, pictured above, with the uniform lining pictured below.

New Rheem Centrifugal Spray Process gives you a completely uniform lining, drum after drum after drum!

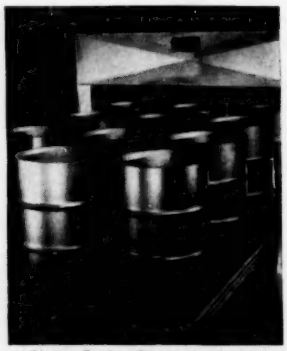


New Centrifugal Sprayer spins off a continuous curtain of finely atomized lining material at a controlled, uniform rate.

All surface areas of a drum automatically lined by the new Rheem Centrifugal Spray Process are—*and stay*—completely and uniformly coated.

This new, fully automatic process not only eliminates globs and skips but blisters and pinholes as well. And Centrifugal Spraying, teamed with the new Rheem Vertical Baking Process, results in a curing job never before equaled!

Only the new Rheem Centrifugal Spray Process gives you: (1) Uniform lining thickness—controlled to within .1 of a mil. (2) Uniform viscosity of lining materials with lower solvent content. (3) Uniform application. There's no air turbulence because there's no air used in the spray and no drum rotation. Spray always travels the same distance to coat all surfaces. Human element eliminated. (4) Uniform curing—thanks to vertical, 3-stage ovens with controlled air flow and temperatures.



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Mines Development	Edgemont, S.D.	300
Rare Metals	Tuba City, Ariz.	250
Union Carbide Nuclear	Uravan, Colo.	1,100
Union Carbide Nuclear	Rifle, Colo.	280
Uranium Reduction	Moab, Utah	1,500
Vanadium Corp. of America	Durango, Colo.	430
Vanadium Corp. of America	Naturita, Colo.	350
Vitro Uranium	Salt Lake City	550
	Total	9,210

. . . And Mills Under Construction or Contract*

COMPANY	LOCATION	CAPACITY tons/day of ore
Dawn Mining	Ford, Wash.	400
Gunnison Mining	Gunnison, Colo.	200
Homestake-New Mexico Partners	Grants, N.M.	750
Homestake-Sapin	Grants, N.M.	1,500
Kermac Nuclear Fuels	Grants, N.M.	3,300
Lucky Mc Uranium	Freemont County, Wyo.	750
Texas-Zinc Minerals	Mexican Hat, Utah	775
Trace Elements	Maybell, Colo.	300
Union Carbide Nuclear	Rifle, Colo.	1,000
Western Nuclear	Split Rock, Wyo.	400
	Total	9,375
	Total (existing and new)	18,305†

* As of June 30, 1957

† Total U.S. mill capacity of 18,305 tons/day—including mills now operating, under construction, or under contract—is 280 tons less than combined totals of the two above listings. The reason: When Union Carbide Nuclear's new plant at Rifle, Colo., comes onstream, the firm's present plant at that location will discontinue operations.

How Fast is Uranium Growing?

How fast is the U.S. uranium industry growing? The question, long shrouded in secrecy by the Atomic Energy Commission, was virtually unanswerable. But last week, the AEC brought the picture up to date with a rundown on uranium developments during the first half of '57.

Total capacity of a dozen uranium mills now in operation in this country is 9,210 tons/day of ore. Sometime next year, total U.S. ore capacity will nearly double—to 18,305 tons/day—when many new mills (*see table*) will be producing.

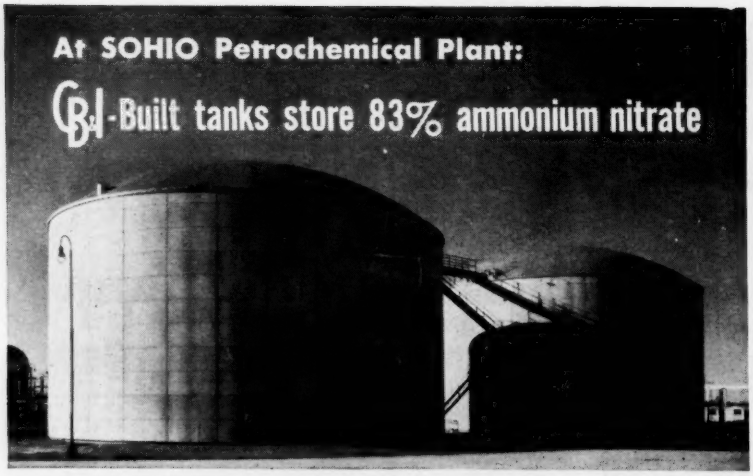
Scheduled to go onstream by the end of '57 are plants operated by Dawn Mining, Texas-Zinc Minerals, Trace Elements, Union Carbide Nuclear and Western Nuclear.

Uranium concentrates received at the AEC's depot at Grand Junction, during the first six months of '57 totaled 4,141 tons of uranium oxide (U_3O_8). This compares with 6,000 tons of concentrate produced in '56—2,600 tons of it in the first six months.

So far this year U.S. uranium ore has been processed at an average rate of 9,350 tons/day. Ore receipts (Jan.-June) at all domestic plants and government purchase depots amounted to more than 1.7 million short tons (dry). About 1.69 million tons (averaging 0.28% oxide) of domestic ores were processed.

Total ore stockpiles in the western United States, as of June 30 this year, amounted to almost 1.95 million tons —448,000 tons of it held by private companies, almost 1.5 million tons by the government.

U.S. uranium ore reserves (as measured, indicated and inferred) are now estimated to be about 67 million tons (averaging 0.27% U_3O_8). They include only those ores considered economically mineable and metallurgically amenable to treatment.



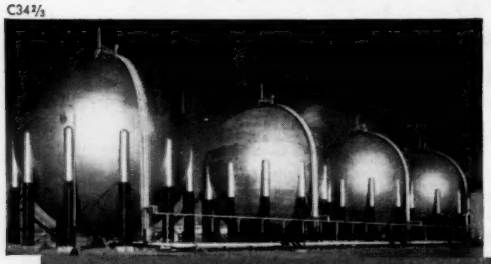
All-stainless and aluminum construction extends useful life of storage structures for ammonia and derivatives

At Sohio Chemical's $17 million ammonia plant, near Lima, Ohio, extensive use was made of stainless steel and aluminum for tanks used to store the highly corrosive products of this new petrochemical operation.

Among other structures, CB&I designed, fabricated and erected the two 80-ft. diameter by 40-ft. high aluminum tanks shown above, built of Alcoa Aluminum. They are designed to hold 35,000 bbls. each of ammonium nitrate.

The handling of special metals, including design of structure, fabrication and erection, is a specialty—and an art with CB&I. Our plants are staffed, experienced and equipped to handle special alloys and to fabricate from a variety of cladding materials. Included is Hortonclad®, produced by the CB&I high-strength, vacuum-bonding process. Write our nearest office for further details.

C342/3



OTHER CB&I STRUCTURES at Lima plant included a 30-foot diam. 304ELC solid-stainless tank for nitric acid storage, 545 aluminum drums for ammonium nitrate solution and the four 20,000 barrel Hortonspheres® at left.

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Mexican Opportunity

Mexico's $60-million retail plastics market is growing at a sprightly 8-10%/year clip. What does this vigorous expansion mean to U.S. plastics producers? A great deal—U.S. firms now supply some 85% of the plastics materials used in Mexico, either through U.S. exports or by manufacture of local affiliates of U.S. companies.

One indication of the forthcoming prosperity of the Mexican plastics industry is its current rate of growth—climbing about three times faster than the rate of population increase. All the more surprising, because only a third of Mexico's total population (32 million) can be said to have purchasing habits comparable to those of U.S. consumers.

Another signpost pointing to the bright plastic future is an enormous market potential. Per-capita consumption of plastics in Mexico is now about 1 lb./year, compared with 20 lbs. a year per capita in the U.S. Moreover, this is more than a paper potential, since Mexico is successfully pushing toward an over-all heavy industrialization in which plastics will play an important role.

The estimated $60-million plastics market represents the value of products that are either imported from the U.S. or manufactured in Mexico from plastic made there. It does not include plastics absorbed by the paint* and textile industries, nor does it include the countless minor applications of plastics outside the plastics industry. (Reason for their omission from the total is the lack of adequate statistics.)

Imports Small: The volume of finished plastic products imported by Mexico is relatively small, should continue to increase in some areas, decrease in others. Total imports now amount to only about 781,400 lbs. a year, valued at some $860,000. (This doesn't include imports of plastic cloth, special cellophanes, and plastic filament.)

In the plastic-filament category, nylon imports may be curtailed in line with the Mexican government's established policy of protecting domestic industry. Reason: Celanese Mexicana started production of Perlon (nylon-

*Most important recent development in the Mexican paint industry is Du Pont's plan to build a $3-million titanium oxide pigment plant in the state of Veracruz.

States Mr. Van Wirt: "Every product a consumer buys will soon be more colorful; color is a vital factor in nearly every industry's battle to win more business."

"Wyandotte meets the exacting standards we expect from our suppliers of raw materials"

—Alfred E. Van Wirt, vice president and technical director, Imperial Paper & Color Corporation

From its small but sound beginnings as a paper-converting company, Imperial Paper and Color Corporation, Glens Falls, N.Y., has emerged as the world's largest chemical-pigment color plant.

Says Alfred E. Van Wirt, vice president and technical director of the company: "We buy raw materials from companies in all parts of the globe . . . materials which we transform into pigments that are used in everything from paint, ink, paper, rubber, plastics, and textiles to the firm's own famous wallpaper line.

"To guarantee top quality, and insure uniform pigment colors, constant research and analytical control goes on at Imperial Paper and Color Corporation. For, it's through advances in chemistry and color technology that consumers enjoy all the benefits of beautiful, uniform colors at practical prices . . . whether in their cars, clothing, cosmetics, wallpapers, or home furnishings.

"We expect our suppliers to be research-minded, too – particularly those who furnish vital chemicals. Wyandotte is one of these companies. We know from experience that Wyandotte meets our exacting standards; but more than that, they are always on tap to supply technical help, should we need it."

Wyandotte is a basic supplier of organic and inorganic chemicals for industry. Wyandotte chemicals are used in paper, textiles, metals, glass, washing and cleaning products, food, pharmaceuticals . . . to name just a few.

If you're striving for consistently high uniformity and quality in your products, remember that the chemicals you use play a mighty important role. Why not talk over your requirements with a Wyandotte representative today; or write us, giving details of your needs. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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THE OLIVER HORIZONTAL FILTER

A standard unit in a job-engineered application at

HOOKER ELECTROCHEMICAL

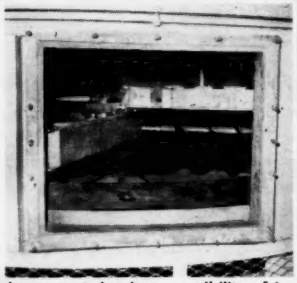
General view of Oliver Horizontal Filter station.

One of the most unusual and successful applications of the Oliver Horizontal Filter is at the Niagara Falls, N. Y. plant of Hooker Electrochemical Company.

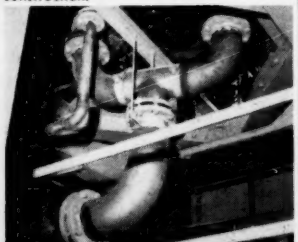
This installation is unusual due to the highly specialized nature of the Hooker Process. The unit handles the dewatering, multi-component solution washing and final dewatering steps prior to thermal drying of HET Acid,* an ingredient of Hooker's flame resistant polyester resin, Hetron*. Basically constructed of stainless steel all direct contact components are coated with a non-contaminable, corrosion-resistant plastic. Product conditions require that the filter hood be of a liquid seal-vapor-tight design providing a completely closed air return system. Control is automatic and viewing ports with illumination are provided for full visibility through the entire cycle.

The ability of the unit to provide sharp filtrate separations ideally suits the Oliver Horizontal Filter for solution washes when several filtrates must be kept separate. This feature along with many other facets of the versatility inherent in the Oliver Horizontal Filter, such as high capacity per unit area and multi-stage counter current wash, qualifies the standard unit for such highly specialized applications.

The Hooker Electrochemical installation is an excellent example of Dorr-Oliver ability to provide the equipment to fit the job. For further information on the Oliver Horizontal Filter, write to Dorr-Oliver Incorporated, Stamford, Conn. Ask for Bulletin No. 7201.



Access port showing accessibility of interior components, inner scroll support bearing not in place; note vapor-tight construction.



Underside of filter showing accessibility of integrally mounted valve and filtrate piping.

*T.M. Hooker Electrochemical Company

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66) last April; when output hits full capacity, tariffs on imported nylon yarn may be raised.

Plastic materials now imported by Mexico, because of insufficient local production, include special cellophane, acrylics, cellulose nitrate, polyamide, cellulose acetate, polyvinyl chloride and polyethylene.

U.S. Affiliates: Because almost all Mexican plastic materials producers are affiliated with U.S. firms, the latter will benefit as the market expands. Plastic materials produced in Mexico include polyvinyl chloride, polyvinyl acetate, polystyrene, phenolics, cellulose acetate, polyamide and cellophane.

As for polyethylene, news is that Petroleos Mexicanos reportedly has reached an agreement with Phillips Petroleum to use Phillips' patents in construction of a 15-million-lbs./year low-pressure polyethylene plant. The installation will be erected at Pemex's Atzcapotzalco (Mexico City) refinery, probably by Arthur G. McKee Co. (Cleveland). McKee is now building Mexico's second catalytic cracking plant at that location.

The polyethylene project is awaiting financing. Most of Pemex's money—always in short supply—is being used to speed completion of Ciudad Pemex in the vast gas fields of the state of Tabasco, where E. J. Hudson Engineering Corp. is constructing an absorption plant.

Other Mexican affiliates of U.S. companies include Monsanto Mexicana; Celanese Mexicana; Reichhold Chemicals de Mexico; Du Pont, S.A. de C.V.; Bakelite de Mexico (affiliate of Union Carbide); Geon de Mexico (affiliate of Goodrich Chemical); and Casco Quimica de Mexico (affiliate of Borden).

Processors of the materials are, of course, as important to the industry as are the raw-materials suppliers. This field is divided almost entirely among Mexican companies and Mexican affiliates of U.S. firms.

Among the more important U.S.-affiliated local companies are Shellmar de Mexico, S.A. (Continental Can); Anaconda Nacional de Cobre, S.A. (Anaconda); Bolta-Omni de Mexico, S.A. (Bolta Products); Asbestos de Mexico, S.A. (Johns-Manville); La Consolidada, S.A. (Shields & Co.); and Cia. Hulera Euzkadi, S.A. (Goodrich Tire & Rubber).

Have you seen this picture of The Land of Plenty?

IN JUST FOUR YEARS, 255 new factories, of many sizes and types, have located in The Land of Plenty.

This is an average of one new plant every 5.8 days.

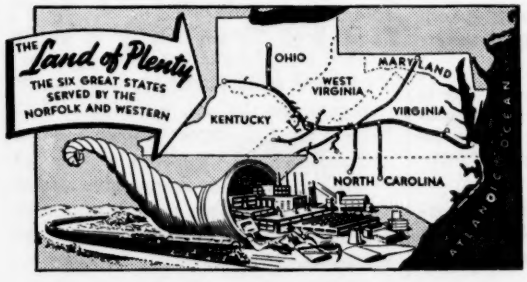
IN JUST FOUR YEARS, 325 factories already established in The Land of Plenty have built additions to their plant facilities.

This is an average of one addition to an established plant every 4.5 days.

Land of Plenty

What this picture shows is that many manufacturers decided *The Land of Plenty* best meets their requirements for efficient manufacture and distribution — and that the establishment and expansion of so many factories is concrete evidence that they made the right decision.

There are plenty of good plant sites in *The Land of Plenty,* for varying types of operations, for small and large plants. In short, here is an excellent story on an abundance of varied raw materials, home-rooted manpower, ample water, N&W Precision Transportation, fair taxes, power, nearness to markets, modern seaport facilities, fair real estate values, good government, clean communities and cooperative public. Let the Norfolk and Western's plant location specialists tell you the story as it applies to your specific needs. Their service is free, dependable, prompt and strictly confidential. No obligation.



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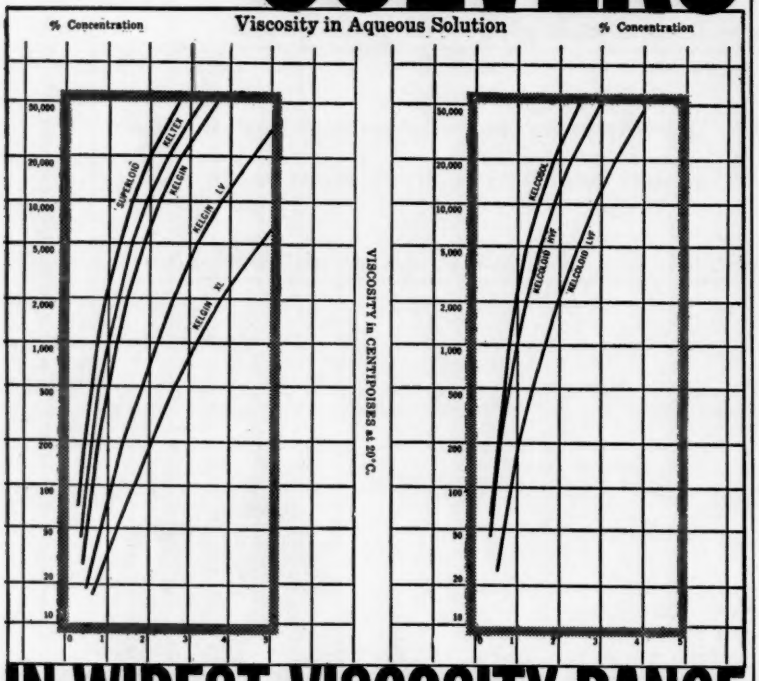

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The Road North

As far as chemical and allied product shipments are concerned, U.S.-Canadian trade runs on a two-way street. But while traffic heading north grows consistently heavier, trade southbound gets lighter.

How great the contrast is growing is clearly indicated in some just-out official Canadian statistics.

Chemicals and related items shipped to the U.S. in the first five months of this year dropped sharply to $37,699,000 as against $41,962,000 shipped down in the like period last year.

The decline is more significant in light of the fact that Canada's total shipments to all foreign markets increased to more than $86 million this year from the Jan.-May '56 total of a shade over $81 million.

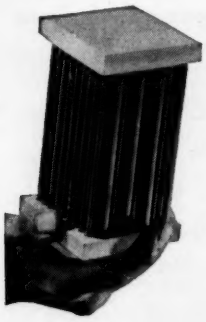
Such shipments to the United Kingdom went higher in this period—$8.5 million vs. $8.3 million, and up, too, were deliveries to all other foreign markets (other than the U.S. and U.K.). Exports to the latter group amounted to $40.2 million in '57, compared with $30.8 million last year.

On the import side, chemical and allied products shipped from the U.S. in the first four months of the year, amounted to approximately $88 million worth—a sizable step-up from last year's $84.7 million.

Total Canadian imports of this kind climbed to more than $99.9 million (vs $99.6 million), with the United Kingdom sending in more than $7-million worth compared with its four-month '56 shipments of $6.6 million. Imports from sources other than the U.S. and U.K., were about $566,000 higher this year than last—$4,918,000 vs. the '56 period's $4,352,000.

Principal Canadian exports during the five-month period mentioned, with '56 comparable figures in brackets: polystyrene, $3.1 million ($2.87 million); plastics and plastic products, $10.5 million ($8.2 million); fertilizers, $24.8 million ($24.98 million); calcium compounds, $2.1 million ($676,000); drugs, medicines, pharmaceuticals, $2.9 million ($2.1 million.)

Plastics and plastic products, in the period reported on, took top spot in the Canadian import statistics—more than $25 million worth in '57 vs $21.8 million during the comparable stretch in '56. Also higher were drugs, medicines, pharmaceuticals; paints and varnishes; acids.



An important message

to the man who thinks his air pollution problem is too difficult—or too expensive—to correct

Too often an air pollution problem exists today for one reason only: The company concerned does not yet know there is now at hand an efficient, effective method of correcting it—often at an actual saving through waste heat recovery.

The method is catalytic oxidation, and the firm that makes this development possible is Oxy-Catalyst, Inc.

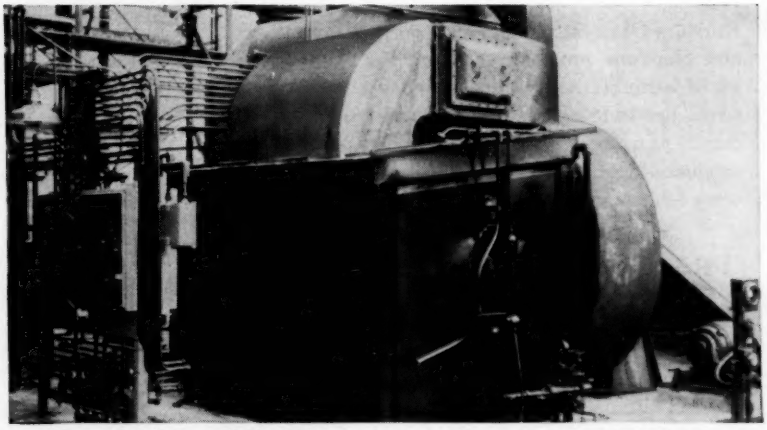
Catalytic oxidation works by "burning" harmful and irritating combustible contaminants in an exhaust stream at temperatures far below their normal ignition points. It provides close to 100% cleanup of foul-smelling fumes and odors. It reduces fire hazards and maintenance problems by eliminating troublesome condensates in oven and furnace exhausts.

Thus Oxy-Catalyst installations can not only control air pollution. They can also be used to release the latent heat energy in waste and process gases. And they can sometimes do both at once.

A More Efficient Catalyst

The key to successful catalytic oxidation is, of course, the catalyst itself. Features which make the Oxycat unique are:

- *The combination of platinum and alumina, chosen from hundreds of elements and compounds as the most active and long lasting catalytic agent*
- *The carrier, a high-grade porcelain selected for its strength, chemical inertness, and resistance to high temperatures*
- *The patented method of applying the catalyst to the carrier*
- *The patented mechanical design of the Oxycat itself*



Oxycat installation on Standard Oil Company of California's phthalic anhydride unit at Richmond, Calif.

The result of this combination of features is a catalytic unit with exceptionally long life at high efficiency. Oxycats are strongly resistant to thermal shock—to contaminating agents and clogging. There's no problem of frequent cleaning or reprocessing. Oxy-Catalyst installations are still functioning at high initial efficiency after over 20,000 hours without maintenance or servicing.

Already in Wide Use

Oxy-Catalyst installations are now working effectively in a wide range of industries—oxidizing combustibles from such processes as asphalt oxidation; phthalic anhydride, polyethylene and ethylene oxide manufacturing; catalytic cracking; and many others.

Oxy-Catalyst installations are carefully engineered to your individual requirements, and our engineers, working with yours, can install Oxycats effectively in any existing plant. So, if air pollution is a problem in your operation—if irritating fumes and odors are costing you neighborhood good will—you should know that Oxy-Catalyst offers a practical, realistic answer to your problem.

Fill in the coupon, or write on your business letterhead, for complete information now.

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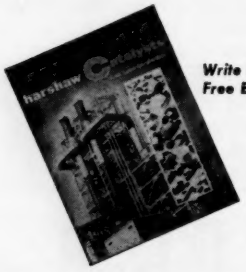
Our experienced technical staff will assist you in developing the best and most economical catalyst. If you have a catalytic process in the development or production stage, a discussion with us may prove beneficial.



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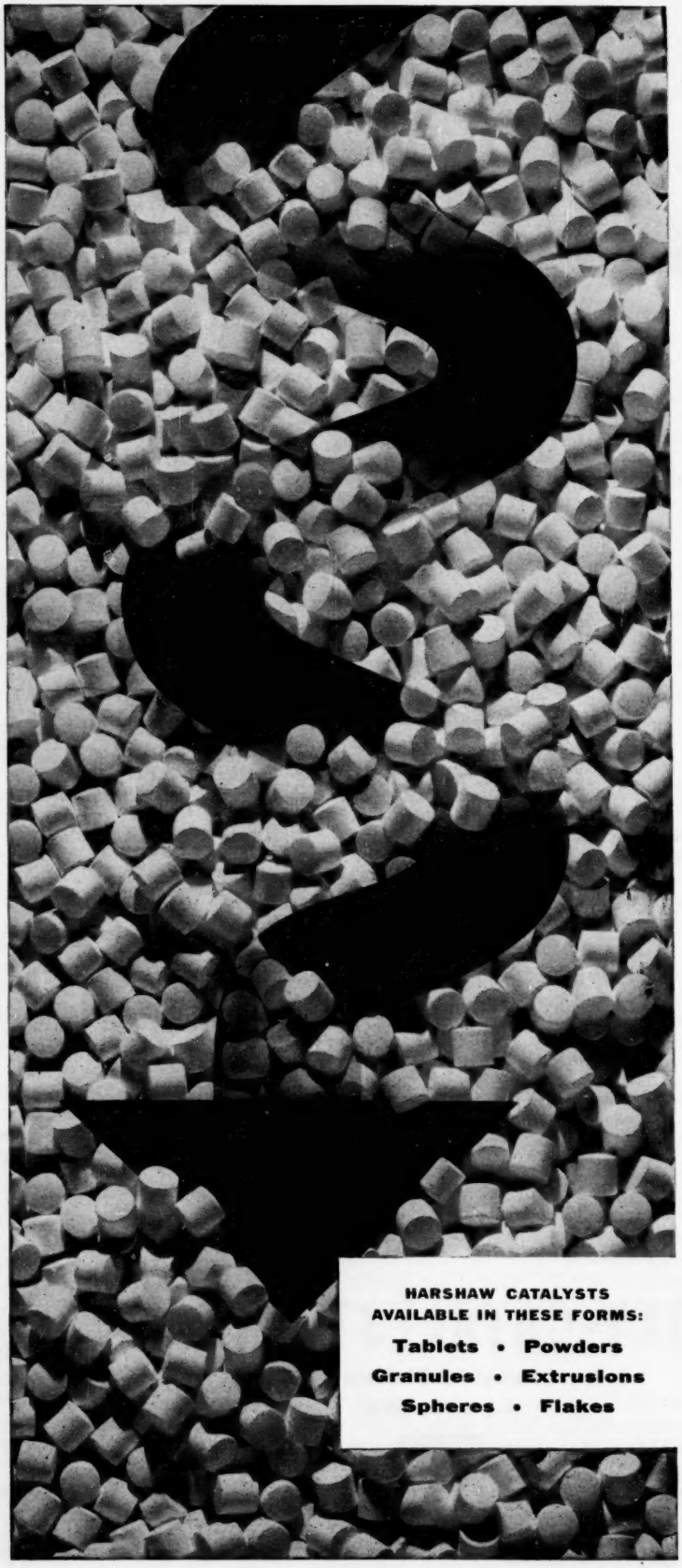

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Market Newsletter

CHEMICAL WEEK
September 7, 1957

The now-emerging pattern of higher prices, clearly outlined in *CW*'s mid-year markets survey (*CW, Jun. 1, p. 35*), is becoming more complete. Many chemical sellers indicated at the time that prices would have to be raised if production costs and freight rates continued to inch up, further squeezing profit margins. And that's been happening.

Among the items thus far announced as slated to cost contract customers more, come Oct. 1, are adipic acid (up ¼¢/lb. to 32¼¢/lb. in carloads and tank loads), liquid and dry grades of caustic potash, USP phenol, maleic anhydride and salicylic acid.

And at least one major producer will lift prices on 2, 4-D. Tags on all formulations of the weed killer will go up about 8% in a move to "compensate for increased steel costs in containers, higher freight rates and over-all boosts in general operating costs."

Selling price of the formulations have been trending downward over the past several years, so the new schedules, says the producer, will still be "far below" those of '51.

•

Custom smelters' copper prices were chipped another ¼¢/lb. last week by the potent price depressor, weak demand. The latest reduction, coming after the previous week's two ½¢/lb. cuts, sets the new smelter level at 27¢—a wide 1½¢/lb. under major U.S. producers' quotes.

Sales of both smelters' and primary material have been barely treading water of late, and observers fully expect the slow-down in movement will soon pull primary prices down too.

•

"Intensive research and aggressive selling" will save the soybean industry. The hard-hitting advice was spelled out early this week by Thomas Daniels, president of Archer-Daniels-Midland, in an address prepared for delivery at the annual meeting of the National Soybean Processors Assn. in Minneapolis.

The ADM president also wagged a critical finger at the "double standard aspect" of the government's farm price support program, declaring that it is designed to assist farmers without regard for other segments of the soybean industry.

"We must buy in an artificial market where the price of the commodity is based on government supports," he said, and "we must sell our end-products in a highly competitive market where supply and demand dictate the final price."

•

Most deniers of Chemstrand's Acrilan staple will cost more Oct. 1. The advances amount to about 4¢/lb. except on 2 denier which

goes up 6¢/lb. Reasons? The same as those cited by Union Carbide when it raised dynel fiber tags a couple of weeks ago: "generally higher costs of producing the fibers, including labor, raw materials and freight costs."

Chemstrand simultaneously introduced a white Acrilan acrylic fiber (Acrilan 16) that's designed, the company says, to "generate new plus-business among end-products where particularly clear white and pastel shades are desired." The material will be available commercially Oct. 1 at regular Acrilan staple prices.

•

Polymer-coated-cellophane prices have been cut 5¢/lb. by Du Pont. New tabs on K-202 and K-203 cellophanes are now 79¢/lb., except in eight western states where the cost is 80½¢/lb. The price reduction is made "in anticipation of improved manufacturing efficiency and expected greater sales volume."

Now also available in commercial quantities is 300 gauge K-203 cellophane, a thin gauge polymer-coated type which previously had been classed as an experiment material.

•

Interested in buying diborane? You can now get it in commercial quantities from Callery Chemical (Pittsburgh, Pa.). The material, according to the company, can be shipped as a compressed gas, stored indefinitely at low temperatures, and handled safely with suitable precautions.

•

In Germany too, chemicals are pacing all industry sales. That's evident in some just-out first half of '57 statistics. The German chemical industry racked up sales of some 8.37 billion marks (about $2 billion), a 14% increase, while total industry sales by German industry were up only 8%.

West German output of synthetic fiber and rayon climbed 10% in the first six months of this year, compared with the same period in '56. The total first half '57 figure: 137,700 tons. This includes synthetic fibers, 8,800 tons (a 22% increase); cellulose-based spun-fibers, 94,200 tons (up 15%); rayon, 34,700 tons (a 3% increase).

SELECTED PRICE CHANGES — WEEK ENDING SEPT. 2, 1957

	Change	New Price
UP		
Acetylsalicylic acid, lcl.	$0.005	$0.635
2-Chloro-4-nitroaniline, powd. dlvd., E.	0.005	0.865
4-Chloro-2-nitroaniline, powd. dlvd., E.	0.005	0.805
DOWN		
Copper cyanide, tech. dms.	$0.016	$0.682

VERSATILE POLYMER PVP

(polyvinylpyrrolidone)

HERE ARE SOME OF THE AREAS IN WHICH PVP IS IMPROVING PRODUCTS AND PROCESSES

Detergents: Prevents soil redeposition, controls color bleeding, and reduces irritation.

Lithography: Colloid for diazo and dichromate sensitizers. Excellent post-etch. In fountain solution, helps keep cloth rollers clean.

Paints: Improves pigment dispersion and film leveling. Makes possible use of dyes to obtain new colors and shades.

Waxes and Polishes: Improves luster, cleansing action, flow, and wetting.

Cosmetics: In hair preparations, PVP improves hair management. Acts as a detoxifier. Stabilizes lathers in shaving preparations and emulsions in skin cleansing products.

Pharmaceuticals: Minimizes toxic side effects of many drugs. Prolongs drug action and increases effective blood level. Acts as suspending agent in liquids and binder in tablets.

Beverages: Removes chill haze and acts as a clarifying agent by complexing with and precipitating tannins in beer, wines and fruit juices.

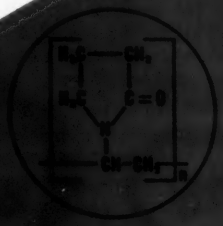
Adhesives: Gives stable dispersions of vinyl adhesives and superior adhesion.

Paper: Produces better pigment dispersions, smoother coatings. Improves wet strength and ink receptivity.

Inks: Better gloss and pigment dispersion. Increases solubility of dyestuffs and prevents gelation. Can improve ball-point inks, typewriter ribbons and carbon papers.

Textiles: Prevents flocculation of titanium dioxide in delustering of synthetic fibers. Adaptable as warp size for acetate and viscose. Improves other sizes. Improves dye receptivity of hydrophobic fibers. Dye scavenger in print washes.

Glass: Gives outstanding adhesion to glass surfaces. Acts as a glass fiber forming size for increased strand strength.



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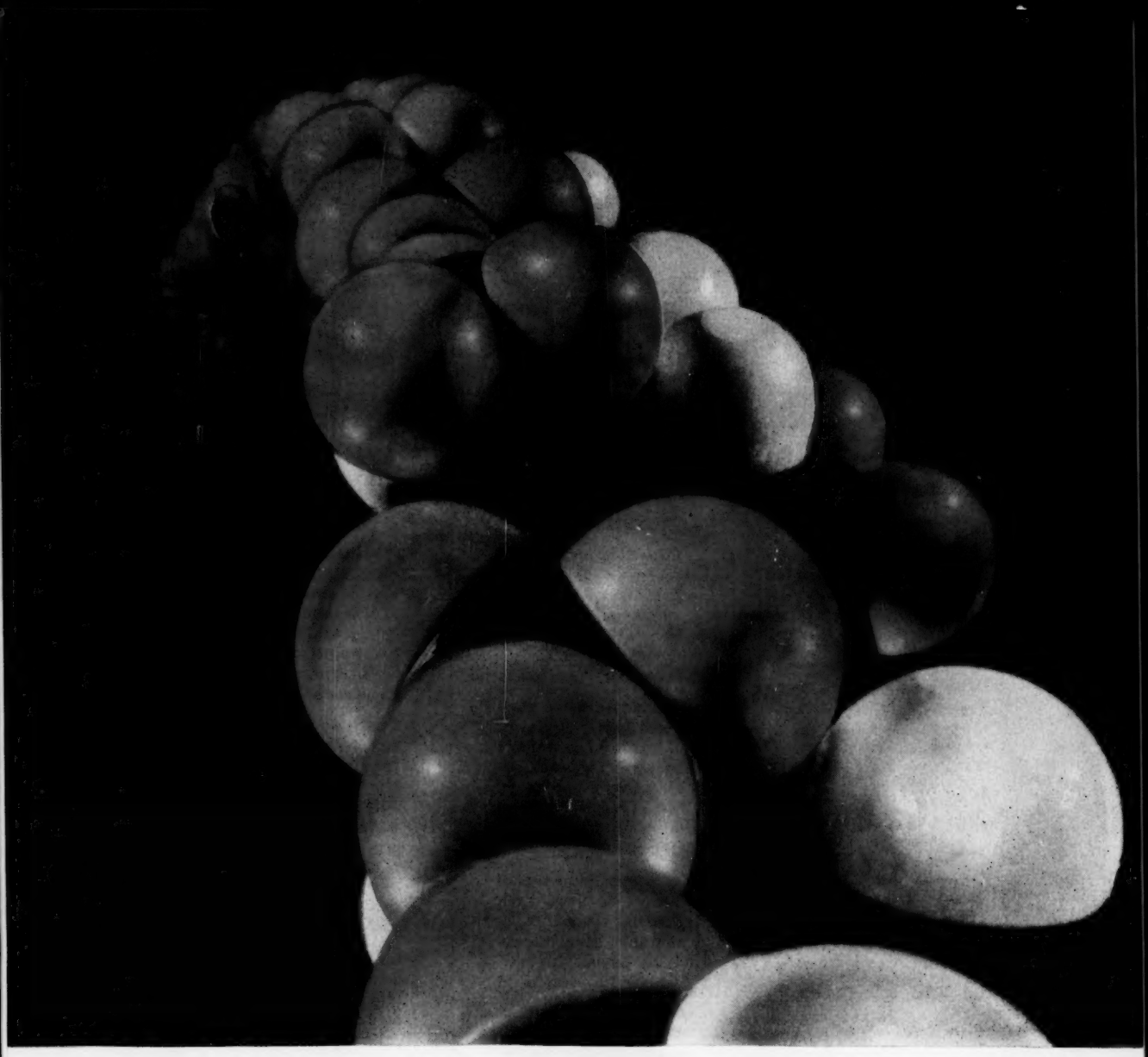
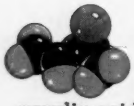


VINYL MONOMERS . . . endless possibilities, thanks to polymer chemistry



Vinyl acetate . . . vinyl propionate . . . methyl isopropenyl ketone . . . and now acrylic acid esters . . . these Celanese monomers are starting points for practically endless product improvements. They have already enabled production of better binders for non-woven fabrics and for water and grease-resistant coatings. They have improved plastics . . . they have improved the properties of emulsions for latex paints, leather, paper and textiles . . . they have enhanced properties of synthetic fibers and rubbers.

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Automotive	Pharmaceutical
Aviation	Plastics
Building	Surface Coatings
Electrical	Textiles

Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Ave., N. Y. 16.

FRANK AMELIA

Over-the-counter cosmetics-selling is getting a lift from the stepped up emphasis on . . .

Allergy: $10-Million Cosmetics Sales Pitch

Hypo-allergenic cosmetics — cosmetics specially formulated for sensitive skins—will get a new advertising treatment within the next few weeks.

Ar-Ex Products Co. (Chicago) and Almay, division of Schieffelin (New York) will launch major campaigns in fashion magazines, (e.g., Harpers' Bazaar, Vogue), designed to push their products out of the prescription department into the broader and more profitable world of fashion.

The new ad program is a repetition of a successful $500,000 campaign by Almay last spring. This fall's ventures, although on a somewhat minor scale for Almay, will be the most extensive ever for Ar-Ex.

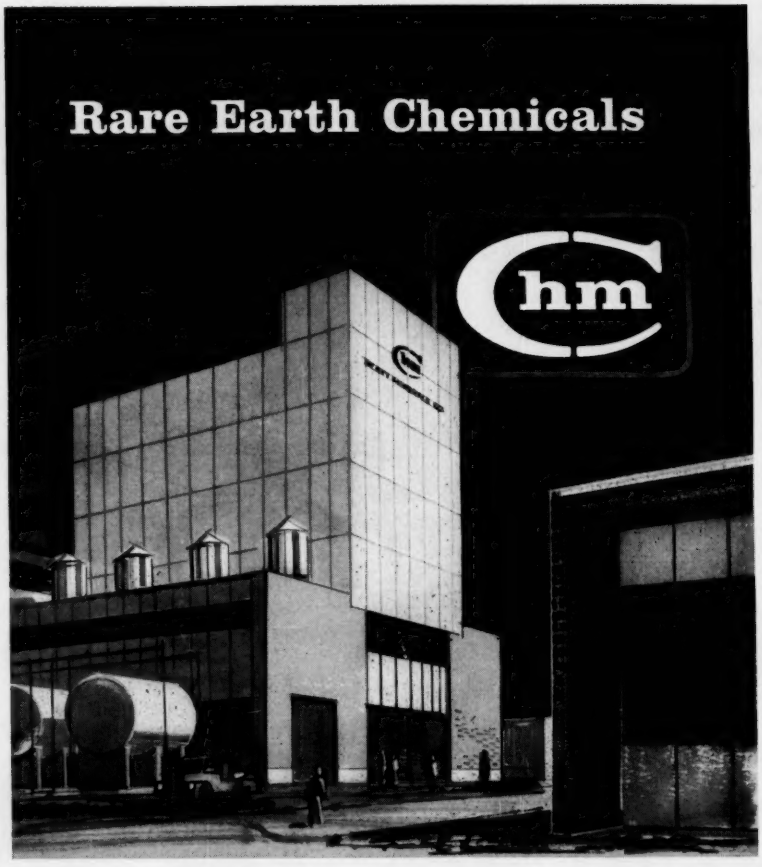
Six-Fold Growth: In spite of austere ad programs of the past*—restricted to medical and pharmaceutical journals—hypo-allergenics have grown six-fold since 1943, to a business worth $10 million.

In the late '30's, a minor brush with the Federal Trade Commission over terminology slowed early growth. Up to that time hypo-allergenics were marketed as non-allergenic cosmetics. But, the FTC said, "there is no such thing as a non-allergenic product," and manufacturers had to turn to the innocuous term, hypo-allergenic.

*A few dermatologists don't want to see these fall advertising campaigns aimed at the general reader. Says one, "These cosmetics are fine if marketed as pharmaceutical products."

It was only a brief setback, however, and in the past few years the business has been brisk. Currently scrambling for the $10-million market are: Ar-Ex; Allercreme, Division of Texas Pharmacal Co. (San Antonio, Texas); Luzier's, a subsidiary of Bristol Myers, (Kansas City, Mo.); Marcelle Cosmetics, Inc. (Chicago); Almay and Beauty Counselors (both of Gross Pointe, Mich.). Estimated by trade sources to have largest sales volumes are Ar-Ex, Marcelle and Allercreme.

Coal Dust and Strawberries: The current $10-million market, most companies feel, is just a small portion of the potential demand. Although the market is difficult to pinpoint,



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some figure that 5% of the U.S. populace are potential customers. And, according to Dr. Irwin I. Lubowe, New York dermatologist, only 1-2% of U.S. women now use some kind of hypo-allergenic cosmetics. Ar-Ex and Almay estimate that ⅔ of American women have never even heard of the term hypo-allergenic.†

Merchandising Difference: Although hypo-allergenic cosmetics cost about the same as regular cosmetics, they have a slightly different distribution pattern. Makers have found that since the hypo-allergenics got their start in the prescription sections of drug stores, drug stores are their major outlet.

Ar-Ex breaks its sales down this way: 75% through drug stores, 25% through department stores. Marcelle sells 90% through drug stores and 10% in department stores; Almay, 85% through drug stores, 15% through department stores. Allercreme occasionally sells by prescription, but the bulk of its products is sold in drug and department stores. On the other hand, Beauty Counselors' products are sold exclusively by personal sales.

Door to Door: Luzier's, sells 90% of its products house to house. (Luzier's 5,000 salesmen, incidentally, never use the word hypo-allergenic. "It's a hard word for the public to swallow," they report.) Although Luzier's might ultimately move into general advertising, it feels "that it doesn't have the distribution needed to advertise nationally."

Many top cosmetic makers feel that any of their products could rightfully be called hypo-allergenic. And here's where the name difficulty comes in. A hypo-allergenic cosmetic is defined as a cosmetic that reduces allergic reactions and irritations by using ingredients with a low index of sensitivity. But all makers of cosmetics bluntly say, "no cosmetic firm would dare put harmful ingredients into its products."

Why Worry? Since they already have 98% of the market, top producers of cosmetics, checked by *CW*, indicate that they do not intend to market a special hypo-allergenic line. Nevertheless, they are aware of the

†Although dermatologists estimate that about 1 out of 10 people react to some allergy, this includes allergies to everything from coal dust to strawberries. The committee on Cosmetics, American Medical Assn., said that no reliable statistics from an impartial source were available on the cosmetic problem.

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market. DuBarry reports that it has been making a stronger bid for the market. And Hazel Bishop has recently developed Formula 77, a hypo-allergenic lipstick.

Medical Opinion: Dermatologists confirm the validity of hypo-allergenics, but with reservations. They feel that claims about the number of cosmetic irritants removed are grossly misleading. They concede that hypo-allergenic cosmetic makers have removed a large number of irritants from their cosmetics. But, they say, so has everybody else. Says one dermatologist, "a number of chemicals listed as having been removed from hypo-allergenic products haven't been used in any cosmetics for years."

"Purer" Lanolin: A few cosmetic raw materials have been boosted into big demand by their role in hypo-allergenics. Top cosmetic makers, as well as hypo-allergenic producers, are now using lanolin derivatives in place of plain lanolin in many of their products. It has been found that acetylated or "propionylated" lanolin envokes a lower incidence of positive skin reaction than the unaltered product.

N. I. Malmstrom and Co. (Brooklyn), Robinson Wagner Co. (New York) and American Cholesterol Products (Edison, N.J.) are leading producers of these lanolin derivatives and so called "purer" lanolins.

Hypo-Allergenic Fragrances: Hypo-allergenic perfumes have been made available recently. Firmenich Inc. (New York) has come out with a line of 10 hypo-allergenic perfumes, known as Chemoderms—chemically and dermatologically tested. Chemoderms are now being supplied to 10 pharmaceutical houses and 15 cosmetic companies.

Robeco Chemicals, Inc. (New York) is now marketing Robane, a vehicle said to be a biogenic constituent of human oil (*CW, Mar. 9, '57, p. 108*) and claimed to be hypo-allergenic. Robane is being supplied to five companies at a cost of $1.95/lb.

Hypo-allergenic sales are definitely on the long-term uptrend as the public becomes more familiar with them. But further growth won't come easy. Cosmetic promotion is rough—and for the first time, hypo-allergenic makers will find themselves in direct competition with the giant cosmetic makers, who have no intention of losing sales.

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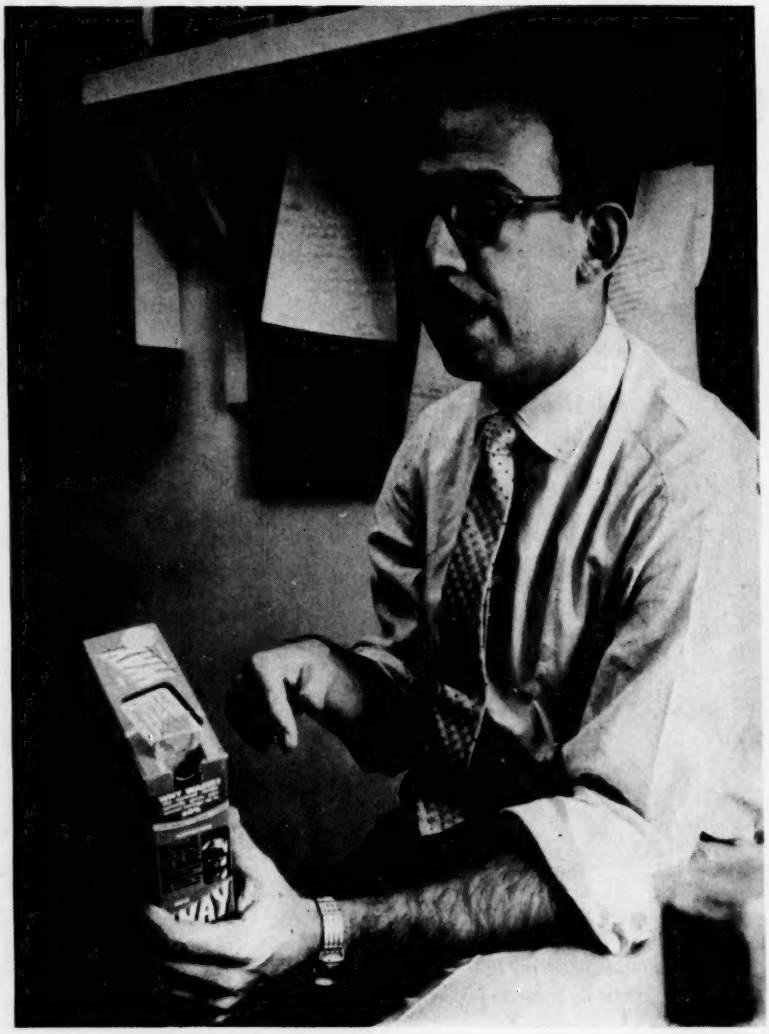

U.S. Meter Container's Silver, now in the soap business, is a . . .

Soaper Selling a Package

Housewives in selected New York supermarkets next week will get their first chance to purchase a new general purpose detergent. The product, called New Way, is the bright hope of neophyte soapmaker, Stan Silver, who as a matter of fact, isn't so much interested in selling the soap as he is in selling the package.

Silver is president of U.S. Meter Container Corp. and the designer of a metered package* (*CW, Oct. 27, 1956, p. 50*) on which he has a patent. He's tried, over the last several years, to sell the metered container to soap companies and others without any luck. Now, he's turned soapmaker to show them that the idea's a good one. "If you can't join them," he says, "fight them."

The new detergent will cost 32¢ for a standard 19 oz. package, (about the standard price for such products). The package, made for him by New Haven Board and Carton, is blue with yellow and white lettering, was designed by Saco Associates (New York).

"Getting it into the supermarket," says Silver, "wasn't hard. All I had to do was to make the deal so

*He's got another "controlled portion" package which he's not actively pushing at this time —a one-at-a-time dispenser for pills or tableted items.

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sweet for them that I gave my shirt away."

The introduction of the new soap won't get much publicity, except for in-store promotion—but that should be, if Silvers' past performance is any indication, something to behold. At the last packaging show in Chicago, Silver caused a minor sensation by having a chimpanzee demonstrate his metered package. "This time," says Silver, "we'll use a giraffe, if we have to. When you're poor you've got to be clever."

Tough Decisions: Forced by the indifference of other manufacturers into using his own package, Silver is rather bitter about why his metered package never caught their fancy. "One reason it was ignored," he declares, "is that changing to this type of package is a big decision for any company and nobody likes to make decisions."

Setting the Standards: As Silver points out, "there are no standards yet in the accuracy of metered boxes, —it's our science. We decide what is accurate." Probably more to the point is the legend on his new detergent. It promises a 95.8% accuracy.

Silver admits he's not the first to come up with a metered container. "The difference between the others and mine is that mine works (*see cut*). Anyone with a razor," he contends, "can design a metered container." But, he contends, they can't withstand being smashed against a wall or slammed on the floor without spilling. "Nor can they measure as well as mine. This is 'it'—the others can rip up their patents."

Since soaps and detergents are probably the major products Silver envisions for his metered container, he's out to convince soap and detergent makers first. His sales-points: If you don't use enough detergent you underwash clothes; if you use too much, you must rinse excessively. His package, he claims, will result in better washing, save the housewife 60% a year in detergent costs.

First of a Series: If the idea proves out in the New York test market (admitted by most manufacturers to be one of the toughest), Silver will try to expand his scope. "The name, New Way, is generic," he says, "there'll be a New Way dry bleach, cocoa, cereal, etc."

For all of these, Silver intends to use private brand makers. He thinks

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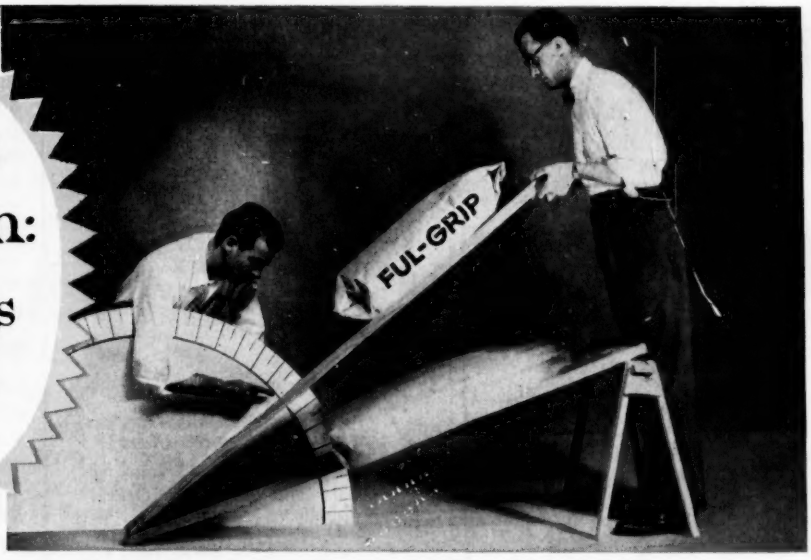

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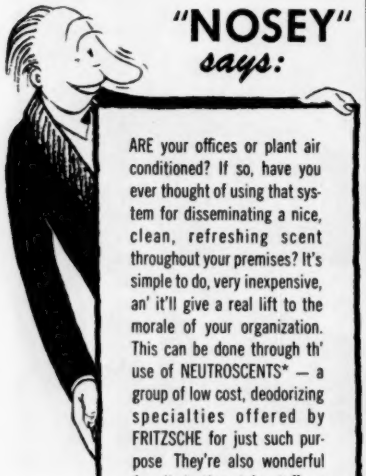

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SPECIALTIES

he can do this and still be competitive with others in the field. "I'll spend one-cent extra per package to tell the housewife the truth about how she can save money by accurately measuring her detergent.

Silver hasn't given up the idea of selling the metered container to others —he's still looking for buyers. He estimates that making the container adds 20% more to packaging costs. In addition, he is asking a 5% royalty on over-all packaging costs. The royalties will apply to specific products, not for a general line.

He's had some nibbles at the package but hasn't landed a big user yet. Among the "interested" group have been makers of insecticides, a deworming chemical, a micropulverized talc (for surgeons gloves), dyes and plastics.

His package is claimed to allow filling machines to operate at their present high speed, only requires one air jet (to push one internal flap) as additional equipment on filling lines.

The next few months should tell whether Silver and the 20 stockholders of his company are right that the "housewife considers measuring a drag." Silver has had stranger ideas that proved successful, was one of the originators of the paint-pictures-by-the-numbers fad back in '47. In the present case, he believes that his idea will mean a fairer shake for the consumer—and a fairer future for Silver.

PRODUCTS

Relaxer: McNeil Laboratories, Inc. (Philadelphia), is now offering Flexin, a new skeletal muscle relaxant and analgesic. Each Flexin tablet contains 125 mg. of Flexin zoxazolamine and 300 mg. of Tylenol acetaminophen. Flexin relieves muscle spasm; Tylenol provides the analgesic effect.

•

Slick Zip: Beco Laboratories (St. Paul, Minn.) is introducing Zip-Eze, a new zipper lubricant. Ingredients: silicone and petrolatum. Retail price: 39¢ for ½-oz. tube. Beco says the average family has from 150 to 200 zippers—ranging in length from 2 in. to 10 ft.

•

Package Deal: Davison Chemical (Baltimore) has developed an activated montomorillonite desiccant designed

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Field Sales Manager of Spencer Chemical Company's Plastics Division needs creative sales minded assistant with ability to convey good selling ideas effectively both orally and in written form. He should also have a thorough knowledge of the ingredients of successful, industrial selling.

He would organize and participate in the following programs: Develop sales seminars about our products and selling strategies for presentation to our field sales organization; create sales approaches utilizing visual aids for use by our salesmen in contacting their accounts; prepare sales bulletins interpreting technical data for the most advantageous use by our salesmen; assist in the organization and execution of an effective sales training program.

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Patent Attorney: *Young-Chemical, Law Degrees.* 11 years corporate, firm experience U. S., Foreign practice. Responsible position N. Y. area. PW-5939, Chemical Week.

Positions Vacant

Midwest pharmaceutical firm with 200 employees is looking for a Research Director. Applicant must have Ph.D. Duties involve supervision of Basic, Clinical and Market Research. P-5826, Chemical Week.

Opening for research and development chemist experienced in the manufacture and various uses of protective coatings, wax, wax compounds, resins, polymer dispersions, plastic, and bituminous materials in industrial manufacturing company laboratory located in Middle West. Apply by letter giving full details of education and experience. All replies will be confidential. P-5213, Chemical Week.

Chemist Salesman for Midwest to work out of our Chicago office. To sell industrial perfumes and odor masking agents. Collegiate training in chemistry required. Few years' experience in competitive sales desirable. Write fully to Polak & Schwarz, Inc., 667 Washington St., New York 14, N. Y.

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Manufacturers Representative with proven sales performance seeking additional line for Michigan. RA-5932, Chemical Week.

British Chemical importers well established ready represent American chemical manufacturers serving dye-stuff, textile, leather, pigment industries. Write RA-6045, Chemical Week.

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business; personal or personnel; financial; equipment; etc., may be offered or located through the classified advertising section of CHEMICAL WEEK. For more information, write to CLASSIFIED ADVERTISING DIVISION P.O. Box 12 New York 36, New York.

SPECIALTIES

primarily for Method-II dehydrated packaging. The new product, Protek-Sorb 88, meets all requirements of military specification Mil-D-3454B. One 32-gram unit of the material will absorb at least 3 g. of water vapor at 20% relative humidity, 6 g. of water vapor at 40% relative humidity. It can be reactivated by heating at 245-260 F for 16 hours.

•

Non-Nutritive Sweetener: Du Pont is now offering "Cylan" sodium cyclamate as a companion product to its "Cyan" calcium cyclamate. The sodium-based sweetener can be used in recipes with phosphates, tartrates and oxalates, where calcium would form insoluble salts. And sodium cyclamate is said to be preferred in effervescent beverage concentrates. Both cyclamates are white solids, 30-times sweeter than sugar.

•

Drilling Mud: A new formulation of Petronate, is the latest oil-drilling specialty of L. Sonneborn Sons, Inc. (New York). It is said to save 25% in drilling time and to cut the number of new drill bits required by 20%. The new mud formulation and how it's used is patented by Gulf Oil Corp.

•

Water Saver: Siponol EGH, made by American Alcolac Corp. (Baltimore, Md.), reduces water evaporation 50% by forming a long-lasting monomolecular film 0.0000001 in. thick on the surface of water. The new product—first commercially offered product of this sort—is a combination of fatty alkanols, it is supplied in 5-pound slabs with accesory attachments to permit it to be anchored in the water reservoir. The thin film spreads out radially from the slab until confronted by a physical barrier, such as the shoveline. Siponol EGH is said to be permeable to oxygen, but resistant to bacterial attack.

•

Bonder: Harwick Standard Chemical Co. (Akron, Ohio) is now marketing Thixon IB-2, a cement for bonding butyl rubber to metal. The black liquid may be applied by brushing, spraying or dipping. Thixon IB-2 is reported to have high resistance to heat and vibration effects, in addition to reducing handling operations and eliminating the need for tie gum in butyl bondings.

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CHARTING BUSINESS

September 7, 1957

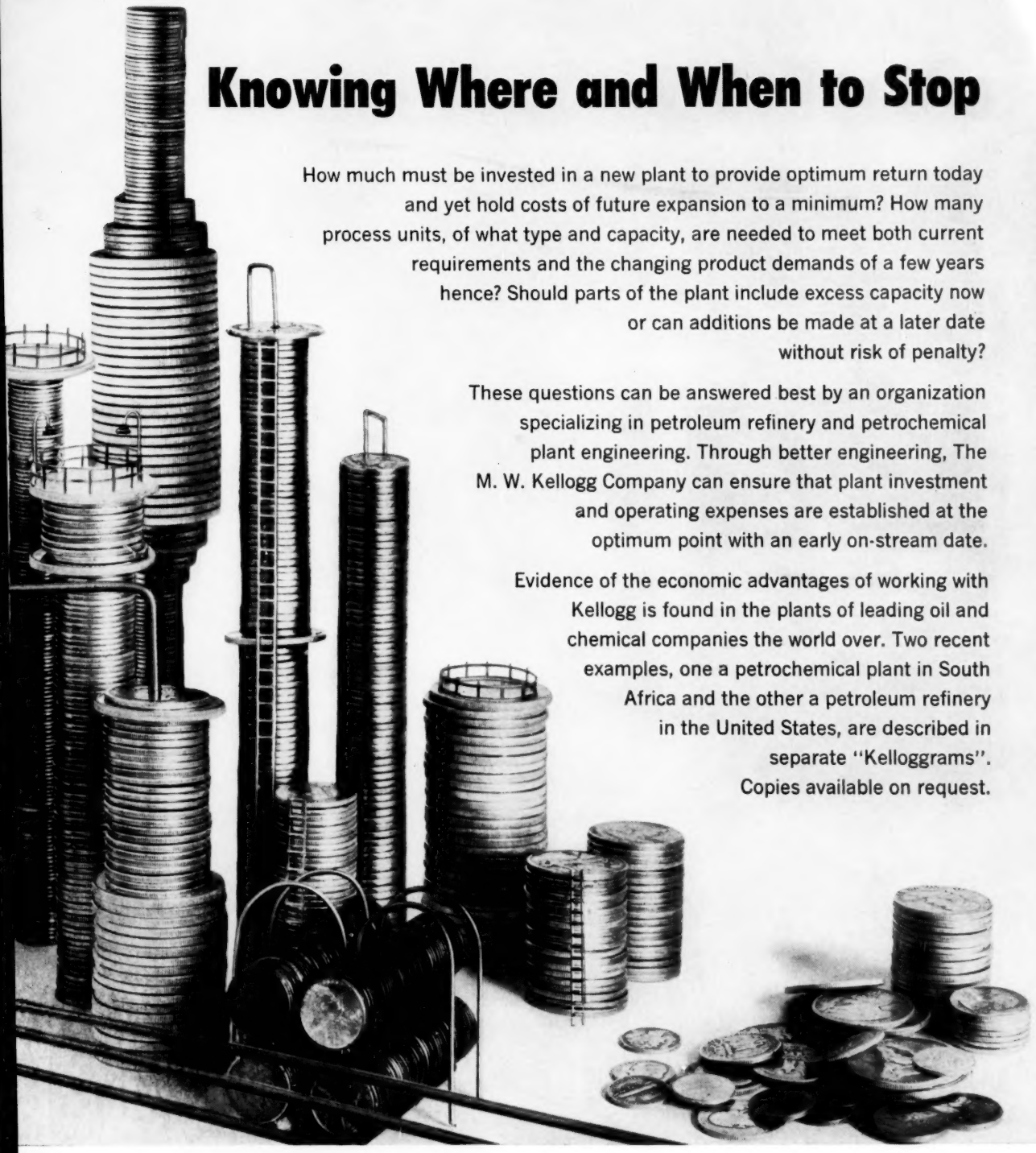
Source: Dominion Bureau of Statistics.

Canadian Ammonia Continues to Climb

Growth of Canadian anhydrous ammonia output continues its steady climb. This year production of this important chemical should hit 325,000 tons, a 43% jump over '52's output of 227,000 tons. Why this big hike in four years?—upped demands for fertilizers. About 77% of Canada's anhydrous ammonia is now consumed by the fertilizer industry. Last year, well over 800,000 tons of fertilizer was sold. This includes ammonium phosphate, 61,000; ammonium nitrate, 25,000 tons; and anhydrous ammonia, 1,500 tons. Other important outlets: pulp and paper making, metallurgy, chemicals, industrial explosives, synthetic fibers and plastics.

There are now seven important producers of anhydrous ammonia: Northwest Nitro Chemical Ltd.; Alberta and Trail; Consolidated Mining and Smelting Co.; Dow; Naugatuck Chemicals; North American Cyanamid; Sherritt Gordon Mines Ltd. Combined capacity is about 470,000 tons/year. Coming on-stream in late '58 is North American Cyanamid's new ammonia installation. Capacity for this unit will be 52,000 tons/year.

Knowing Where and When to Stop



How much must be invested in a new plant to provide optimum return today and yet hold costs of future expansion to a minimum? How many process units, of what type and capacity, are needed to meet both current requirements and the changing product demands of a few years hence? Should parts of the plant include excess capacity now or can additions be made at a later date without risk of penalty?

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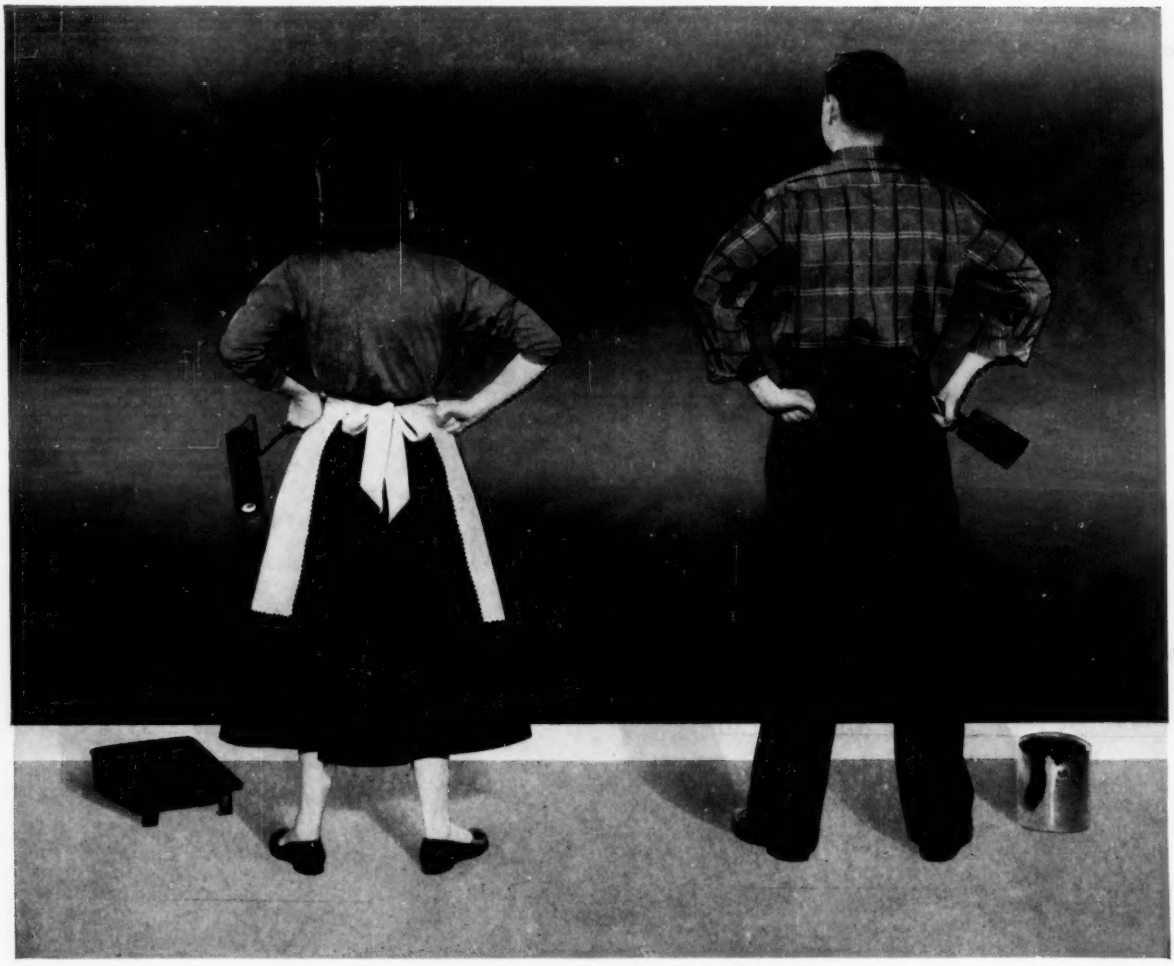

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As a protective colloid in emulsion polymerization, CELLOSIZE WP-09 or WP-300 gives excellent, water-resistant latex films. Also, the latexes are stable to electrolytes and give good shelf life and mechanical stability.

As a thickener, CELLOSIZE WP-4400 goes into solution easily and quickly at room temperatures, helps give the finished paint clean, bright colors, and improved scrub resistance.

Remember CELLOSIZE *HEC is the only water soluble gum used to make the base latex and to thicken latex paints.*

Let us tell you how CELLOSIZE HEC can eliminate variables in your base latex or latex paint. Write Union Carbide Chemicals Company, Room 328, Department HA, 30 East 42nd Street, New York 17, New York. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

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CHEMICALS

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